PREMIER COMPUCERS 3 UNION COURT RICHMOND SURREY EWSTAR ENGLAND

Cel OI 940 1134 Celez 926734

NEWS IN BRIEF **Chess master** sets up firm

THE international chess master David Levy, who hist year won his ten-year bet that no chessplaying computer would bear him before August 1978, is to form his own company.

To be called Intelligent Software l.td, its main aim will be to write software and provide udvice for people incorporating microprocessors in lugical

Hetel systems

appointment of a programme director, must be established by tiRAND Metropolitan Hotels the Department of Education has ordered eight more and Science if the challenge of microprocessor-hased hotel systhe microprocessor is to be met. tems from Hoskyns, following That is the main recommendathe successful installation of its tion of the Science Rescurch first such system at St Ermin's Council panel on computing chaired by Derek Roberts (CW, Hotel last September. The systen's will handle front-office May 4, 1978), which has just operations in the group's submitted its report. medium-sized London hotels and are due to be installed by wasteful of manpower to expect ench and every local education

'Premature' strike

THE Post Office has predicted that a one-day stoppage by 6,000 members of the Society of Civil and Public Servents Inst Friday, in support of a regrading and improved pay claim (CW, March 22), will have minimal effect on customers. Describing the action as "premature". a Post Office spokesman said that the SCPS oction allected the National Giru Bank office in Bootle and slowed the processing of telephone billing.

Munich office

TURNKEY Systems international, best known for its IBMcompatible TP monitor Task/Master, has opened its lirst office in continental Europe. The new office, in Munich, complements an existing office in London.

cluding IBM. E.g.:

Storage Technology Lid.

10-12 Old Court Place

London W8 48R

01-937 9638

Bank refutes 'That's Life' direct debit allegations

ALLEGATIONS made on Esther Rantzen's "That's Life" progrnmme that banka do not check nave been refuted by Lloyds. a "one in 20 million human error" in a system that has a wide range of safeguards and indemnities, a Lloyds Bank it even though it had no author-

The TV programme featured a

"It is both inrealistic and

anthority to tackle the problem

ndependently." the report

piecemeal approach hampers

the production and spread of useful software." Thus the

report recommends a major

national programme run by the

DES in which the SRC, locul

authorities, the Schools Council, the Council for Educational

versity would all be involved.

Technology, and the Open Uni-

It also proposes that the SRC

should fund the development of

easy-to-use, highly reliable soft-

ware packages for schools, in-

INTEL is expected to move into

the solid state disc business later

this year with a product that will

STORAGE TECHNOLOGY

FOR QUALITY AND SERVICE

THE WAY THE

IDIVI USEKS—

WOULD YOU LIKE 30% IMPROVEMENT

IN YOUR TAPE PERFORMANCE?

Independent figures show that our tape drives give

belter porformence then any other suppliers in-

3420-4 46 % improvement

3420-6 29% improvement

Call us for details:

"Furthermore, a

computing developments in machine interface, schools and colleges, with the

out a life insurance policy with Friends Provident Life Assurance, and had arranged for premiums to be pald by standing order. By an oversight, the insurance company aent a direct debit to the man's bank, and by another oversight the bank paid

According to the Lloyds

needed, says SRC

The Roberts panel comprised

several well-known names in

industry and the universitles.

including lunn Sarron of

Inmos, and Phllip Hughes,

chairman of Logica. Last year it

circularised a wide range of

government departments, uni-

versities, and business firms to

get their views on the relative

inportance of three areas:

education and trnining, new

computer applications, and new

overwhelmingly of the view that education was the highest

priority, pointing to the need to

improve computer expertise

throughout the education spec-

trum. New applications were

also regarded as important, with

main interest focussing on in-

dustriel robotics, microproces-

aor applications, and the man-machine interface.

There was less enthuslasm

for new technology, and that

came from universities, concen-

trating on software. As a result,

the panel is recommending that

be offered as a direct alternative

to IBM's fixed head disc storage.

Storage Technology already

offers such a product in the form

of the 4305, which uses charge

coupled device, CCD, com-

concuts, but industry acurces

"much more the SRC should fund additional

imaginative problem-solving research on database utilisation

The 250 replies received were

computer technology.

puter checks each direct debit to branch to complain, and was see whether there has been a told by an inexperienced previous one from the same company. If there has, it passes it, and if not, it throws it up for manual checking that there has been authorismilon. In this in-

not performed, owing to human The blunder was compounded

tolerant systems, but it is also

saying that there should be more

research into chip design, pos-sibly centred at Rutherford

Regarding university educa-

tion, the panel recommends that

there should be a nullonal pro-

gramme to increase the com-

spokesman, the bank's com- when the customer went into his member of staff, "Oh no, we don't check direct dehits.'

The spokesman also pointed out that only organisations of "standing" such us large counstance, the manual check was panies and the AA are allowed to send direct dehits, after having taken out indemnities against

Education co-ordinator

Till: wide-ranging report of microelectronics and informs tion technology prepared last year by lann Barron and Ray irmow under a contract from the Department of Industry, is to he published next month.

Prepared under the auspice of the Science Policy Research Unit of Sussex University, the report became something of a political football, with many pressure groups claiming the the flot was "suppressing" because of its contents. And these were the implication the Information Technology con bead to there being low willing unemployed in the UK (CR October 5, 1978).

In fact, the Dol never made any concerted attempt to sup rinderstered to be unhappy about some of the conclusions conce

Originally called Towards as Information Society, in " published form the book will? ralled The Future With Microelectronics, and it will published by Frances Pius with a price of £7.95.

Relipse options

USERS of the Data General Eclipse S/250 sicentific system are now infereil two opilozal sidellite computers for processing arrays. The two machines are the Models 8660 and 866. Both come with the basic Eclips instruction set, while the 860 also provides array processing press operatora over new roking arrangements are also proving difficult.

charge it levies on members' over live years. The amortisarevenues from 2% to 112% from tion part of the total tariff is now £1.7 million a year Instead of £2.4 A letter was sent to all SE members last week saying that the overnil annual Tallsman The strongest protests following the announcement of the tariff would be reduced from the present £8.9 million to £8.2 milscale of charges for individual about the "hump" in the middle Solid state IBM disc from Intel

Stock Exchange alters

CHARGES for the Talisman bon, subject to confirmation in

Council in response to protests the £3.5 million halance of the

Talisman charges

settlement system, scheduled to July.

go live this week, are to he

changed by the Stock Exchange

from members. To further sweeten the Tollsman pill the SE

will cut the general service

prices they start to make sense

for solid state discs. The slowest

RAMs still offer access times

thot are far faster than elther

Morgan Stanley sees a much

fixed head disc or CCD units.

£5,000 to £10,000 afea a darively more costly than smaller or big-

The £700,000 a year reduction

will be achieved by writing oft

capital expenditure on the bar

gain accounting purt of the sys-

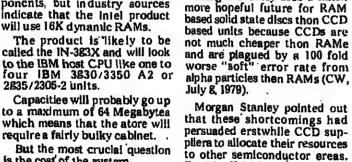
tem rather than amortising it



Report on micros for Dol out next month

press the report, though it was ming the CSERR.

Times to resume publication on Tuesday (CW, March 17). attention is now focussed on ulks with the craft print union, the NGA, which have taken a tum for the worse after earlier progress. The union turned own a management proposal or a trial period with new technology and is considering weenthusiastically a pian for ubiration Talks with Nataopa



Intel itself had dropped out of the cost of the system. New York stock analysts, the CCD business clong with its Morgan Stanley, racently alternetive source, National pointed out in one of its elec- Semiconductor, and Motorola tronics newslettars that very had also given up. It appeared that only Fairchild remained as the one committed CCD suppl-£2.80 each and that at auch low ler

AVAILABLE FOR SALE OR LEASE

ATLANTIC

370/145 102 12Mb English Language 3350 Disk Storage 370/138 100 English Language



Printed in Great Britain by Q.B. Limited Sheepen Place Colchester COS SLJ and published by IP Residual Establishmen Press Ltd., Domest Whose, Stamford Street, London, SE SLJ.



Number 649

Geoff Cross to be A. B. Dick

president and chief executive

Thursday, April 19, 1979

Price 18p

NEWBURY

Smart Visual Display Terminals

PRICES · FROM £495

Newbury Leboratorisa Ltd. Head Olince & Salus King Straet, Odiham Hampshire RG25 1NN

Tel 025-671 2910

Briefing TP system

THE powerful teleprocessing

system, Sysiai, developed by System for the Digital Equip-ment VAX-11-780 (CW, De-cember 21/28, 1978), has now

been formolly announced by the Leeds based company. De-

fiveries to selected sites in the

UK will start in the summer and

the single user price will be

Systel runs under the

standard VAX/VMS operating

system and provides facilities like multithreading and simul-

taneous program development.

Composing system

A NEWSPAPER composition system, aimed at medium-sized

publications, is being developed by SPL and Coltec Data Sys-

tems. Based on a PDP-11 pro-

cessor and Coltec's VDUs, the

software is designed to be able to

drive any phototypesetter. The lirst installation will be at the

Lancashire Evening Post in

mid-1978, using a Compugraphic Videosetter 5.

FULLOWING the fallure of The

European first

HE first Honeywell Lavel 68/

DPS Multics system to be in-

falled in Europe has been

acepted shead of schedula by the Avon Universities Com-

puing Centre, having passed its Central Computer Agency ladware and software trials in time.

Key-to-disc order

Destal Development Corp of Sales 500 head par track disc sales. They are to be used with barms.

EAD of the new Joint Network

leiwork head

Paems.

it has placed so order worth

Sad times

training and live operation.

launched

AFTER nearly 18 months of seeking acquisitions for UK company GEC in the US, from an effice in San Diago, former iCL managing director Geoffrey Cross is to become president and chief executive of A. B. Dick, the Chicogo-besed effice equipment manufacturer acquired by GEC in a £52 million takeover, The company was ecquired by GEC with a view to marrying GEC's

computer and communications technology to Dick's office equipment, in order to participate in the fooming battle for a substantial share of the office

Cross has retinquished his post as head of GEC Enterprises, the company involved in seaking potential US ecquisitions, but GEC stresses that the quast for acquisitions will continue.

Albert B. Dick III becomes chairmen of the Chicago compeny, and Sir Robert Telford, managing director of GEC-Marconi Electronics, who woold Dick in partnarchip with Cross, also joins the board.

Meanwhile the Cross are at iCL is now well and truly over with the humiliant departure of the second of the two lightness and the partners.

imminent departure of the second of the two liamenents most closely essociated with Cross, Ed Mack. The resignations were widely expected once Cross left, and stricter tax regulations affecting Americans working abroad, coupled with a feeling that his work on the 2000 series development was assentially complete, are thought to have contributed to Mack'e decision to return to the US. He is on holidey at present and not available for comment.

More options

for ICL users

introduced an extended version

of its VME/B software TP Op-tion. To be known as TPMS, this

will run both under B and under K from release KSV17 onwards

and will be available from the middle of the year.

At the bottom end, the com-pany has broken decisively with

its partner of the lest 18 months,

Telecomputing, and will instead be marketing TPE, a 2903/4 en-

try level package developed by Transaction Processing Sys-



specifically intended for DME

Correlative Systems Inter-national of Brussels, which

bas just set up a UK aubsidiary

based in Birminghem called Corr/Sys. The firm is now talking to three of the major UK

clearing banks about Videofiche, as well as the BBC,

British Airways and severe

building societies.
Videofiche could turn out to

ba a hot competitor for the

cheque acanning and

transmission systems currently

Videofiche document

processing takes off

Turn to pege 2

Politics costs Univac

WITHIN days of losing out to contract, and this is expected to Cll-Honeywell Bull on the con- be paid out of government funds tract for a message switching system for the Soviet Uolon, ollocated for support of the French computer industry. Inlvac has lost o second con-Because of the Easter holiday. tract to the French company, nobody could be contacted at this time from n steel company. Solmer, but it is understund that in each case, the decision was the company has two CII Iris

purely political, The steel company, Solmer. has recently come under French state control as part of n re-structuring of the French steel industry, Prior to this it had awurded Univac n 30 million franc contract for a large-scale dual processor 1100/82 system.

After four months of pressure from the French Industry Ministry, Solmer has now been persuaded to change its mind, cancel the 1100 contract and instead take n multi-processor Level 66/ DPS-3 muchine from CII-HB. Although final assembly and test of Level 66 machines is just heginning in France, it is expected that the machine from Solmer will come from Honeyusers alming to migrate to VME. well's Phoenix, Arlzona, plant,

Univac is to get compensation of \$1.2 Million for the broken

slan news agency. This, for message switching in conner-tion with the 1980 Olympics (CW, April 12), it is almost cerlain that his decision came too late to save the urder and that it too will go to CIL-HB, this time with un life 80. A spokesman for Univac in

Bluebell, Pennsylvania, told Computer Weekly that the company was still hopeful of getting the business, but CH-1113 s understood to have a firm contruct.

60s, so conversion would be

Although President Carter

lest week reversed his previous

decision to emhargo a Univac

1100 system wanted by the Rus-

Involved either way.

Export of either machine to Russla will still have tu go through the CoCum approval process, and Univac has submitted its proposal for approval.

Euronet on agenda

EURONET will be the subject of the BCS data communications specialist group's meeting next Monday, April 27, at the BCS headquarters, 13 Mansfield Street, London, starting at 6pm. The speaker is to be Phil Kelly, he Post Office director of network planning.

ducts in aix market sectors. Digico may offer alternative to 370X front end processor

IBM users may eoon be offered an alternetive to the 370X front end processor by Digico, a firm already well established as e suppliar of FEPs to ICL 1900

COUNTERING rspeated criti-

philosophy, ICL has hit back

with a strategic series of soft-

to show that it can now meet

nny transaction processing requirement from within its own

The software announced

covers the complete range from entry level 2003/4 applications up to large 2009-based ayatems running under VME/B end in-

cludes new or enhanced pro-

Digico aaya it is seriously looking et the IBM market and sace a need for an FEP that would be user programmable and could carry out full date validation and fije updating, relieving the host of come of

important atep in the direction 400 cpm card reader for HASP of IBM front ending with a community HASP workstation based on its. 370/158.

16E computer. The system provides the unusual additional concurrently as a disc based multiprogremming processor that can ba

processor that can programmed in Basic.
The first lostelletion has been made by Digico's Danish agent et Kado, a furniture manufecturer in Copenhagen. The configuration includes five VDUs end: 11 Megabytes of discusses for first processing as storage for focal procassing as Digico hae already taken an well as a 600 lpm printer and e cationa with e remote

ELECTRONIC document November 9, 1978). the first installations are being made of the Videofiche system.

ona of the star turna at last Turn to page 17 year's Sicob exhibition in Paris (CW, Septembar 28, 1978). Videoriche was developed by

processing looks like getting off the ground in a big way now that it is currently developing a smaller version of its existing

The Intertel range of data communications equipment was the first to be based on the same principles as to support. In other words

from modems to powerful network controllers. Network Control Systems The most advenced in the world: Single site capability for network and terminal diagnosis, rerouting

and reconfiguration.

a true systems approach

Modems A fully integrated range of high quality modems. Speeds from 1200 to 9500 bps



Communics Hoos Products Division 19 Marylebona Road London NW1 Tel:01-486-7288

A Maythron Company

JOB OPPORTUNITIES: PAGES 24-47

ALSO....

being devaloped by Burroughs for the Midland Benk (CW, March 1), and by NCR in the US for the Bank of America (CW, COMPUTER WEEKLY'S INSIDE NEWS

leam of the Computer Board THE TRAINING GAP Ind the Research Councils (CW, Why is there will such an error

Innury I) is Roland Roaner, with the now Hamilton believes only in the now Hamilton believes only in the laboratories, near Oxford.

Why is there still such an enormous dearth of programmers? Johnstian Hamilton believes only in the laboratories, near Oxford.

Why is there still such an enormous dearth of programmers? Johnstian Hamilton believes only in the stuation. dentories, near Oxford.

alisman escapes INDIAN PALMER

OESPITE a fire et the Stock Techange's Wilson Street com-Changes Wison Street complete the Stock Puter centre on the Mark Puter centre on the Fridey went to study the hardware seems and the proposets of collapsystem with European compenies. This week at operation.

FIRST OF THE STARS

Computestairs 78 is kinder way.
Report and plotures of some of the legislights.

Paybor 14/18

Paybor 14/18

Paybor 14/18

Paybor 14/18

The provint of subprocessing rescuration for the paybor of the payb

Thursdoy, April 19, 1979

Deputy Editor 01-261 8696 Tony Higgina

Advertisement Managar 01-261 8359 Harry Hutson 01-261 8593

Class Ad Manager. Brian Durrant 01-261 8597 tPC Blactrical Electronic Press Ltd, Corset House, Stamford Steet, London, 821 SLU. Talephose: 81-281 SCGG. Telogyams/Teles: 281 37 SISPRS Q

Branch Ottlicat; Straningham, 202 Lynton House, Walsall Burtl, Bujnauhtan 228 Talephone 021-356 4838

Manchester: Statham Rouse Tulbos Road Strotlas: 1 Manchester M32 Teli phone 061-872 42 CL

New York: 205 East 42nd Street New York No 10017 M (-17) 867 3080 Tales 42 (710

Published worlds on Hursday Hagisteroil at the Post Office 69 a newspaper Pose per capy 18p

IPC Business Press Ltd 1978

CIRCULATION INQUIRIES Requested Rendership: 01-837 3636 Sebscriptions: 0444 59188.

Mambers of Computer Watkly staff may be contacted directly on the extensions listed below. Other de-

EOITOBIAL

EMISSTRAVOA Display Chils O'Hea 261 6858 281 8743 281 8283 Lloyd Colling Stove Bass ion Gurtes OE1-872 4211

021-356 4638 Cisesified Chrie Prier Eddie Ferreil Mark William John Ferrer Ken Weilord

081-872 4211

021-386 4638 Production Cavid Abbey 261 8016

Computer Weekly has a circulation much week of ever \$2,000 including the high-est fully requested classified in the UK. The interestional addition, which ha

Computer Workly is sard from all charge to the lobouring categories in the US and Erro only: Company directors, company secretarias. satinggenest mivicas asastulives, civil servanta satinggenest mivicas asastulives, civil servanta satinggenest/superalities. The computing management/computer ocalidatis. Inclumers and teachers, DP Hanaper/supervisors, systems analysis (Ball dillects, programmers.

Controlled Circulation Department WG Sultinons Proce (Soice & Distribution) Lie, 45 Bowling Bront Lone, London EO It Bit, 1st; 561-57 MSS. Subscriptions for readers extends the above Categorium Line year, WE 74.55; overseas 210. USA, Catego 25. Mirmedicates overseas 210. USA, Catego 25. Mirmedicates on overseas 110. USA, Catego 25. Mirmedicates on

ISSN 0010-4787

doubt we'll say it again: "Computer education in secondary schools is too important to be left to educationists."

The inuch-vaunted autonomy which the British educational system accords to individual schools and education outhorlties may be an important safeguard for acodemic freedom, hut there comes a time when a mensure of central direction may be desirable, if not essential.

That time is long past as far as computer education is concerned. We can no longer afford to have generations of schoollcavers going out into the world in total ignorance of computers and their influence - for good and cvil - on the society in which we live.

That this is beginning to be appreciated in high places is cvident from government recommendations that a central agency should be established to administer • £12 million programme for promoting the study and use of microcomputers in schools (CW, Mnrch 15) and from the report of the Science Research Council (CW, April 12) which states that central coordination of developments in schools and colleges, with the appointment of a programme director, must be established by the Department of Education and Science, if the challenge of

the microprocessor is to be mel. Far from this being an in-

A national necessity

practice, turns out to be freedom. The teaching of u number of subjects rather than leaving it as to provide inadequate curriculo the sole preserve of the Matheto meet the needs of those who ere going out into a not particularly friendly world, it is, in feesible. fact, an attempt to be more responsive to those needs.

That is not to say that the educational system should be gcared up to produce a generation of programmers or systems analysis - although a few more of these would not come amiss but rather to give as wide a spectrum of schoolchildren as

computing is all about. Such evidence as we have suggests that schoolchildren react positively to computers, particularly if this involves 'hands-on" experience, and that this reaction is by no mesns limited to the brighter children. The computer thus becomes

not just another boring subject to be studied at a theoretical level, but a powerful teaching aid, in the hands of an imaginative teacher. And with the advent of the low-cost sidious nilempt to subvert microcomputer the possibility of en-ordinated programme for providing that education should be adopted rather than a haphazaid reliauce on the cuthusiasu of dedicated individuals which is our current aggreach to this

Individual cuthusiasm can achieve much, and is not to be snecred at. We are fortunate to have had a budy such as the Computer Education Group to provide a focal point for work in his field. But the time has conce for a concerted and sustained uttack on computer illiteracy.

and that a centrally planned and

A survey carried out by PA International for the Denart ment of Industry showed that ante 8% of the companies afterviewed had taken any action with regard to the use of microprocessors, and that 53% had done nothing at all. It is at least argumble that a programme of computer education carried out at secondary school level - and beyond - over a ten-year period would have had some influence on those figures.

70 . . . Trens World Alding pleuned to extend its online eservation system to its (Computer education is no Street offices and It hoped to longer a purely academic conextend the 88300-based by sideration: it is becoming a te cover the Hilton Hotelschill netional necessity.

Stick and carrot Ten Labour policy

manifesto for instituting plan- that the firma' plana for devening agreements with large lopment and investment were in companies, accompanied by line with the Industrial Strategy. statutory back-up, have met with little approval la the com- investment is taking place, puter industry. Peter Hall, cor- where factories are being built porate director of ICL, said that relative to areas with unemsuch a policy would "hinder the company's ability to seize firm is pressing hard enough opportunities when they arise," with introducing microprocesand would not prove to be sors and other naw technology.

workshlein practice. what its level of R&D

workable in practice. Such sgreemants, according expenditure is, and other

to a Labour Party spokesman, matters affecting national and would be negotiated between ragional priorities. the government and the top 100 A combination of "sticks and orso large companies in the UK, carrots" would, according to the are basically against any statu-

facilities or connections requested at one time.

The only distance-related

charge occura when acceasing a packer switching exchange over

from a character terminal. All

charges within PSS are

ndependent of distance, as are

those on the French Transpac

ployment problems, whether the

as much again to double the

The range is from £800 for e

Dataline 300 character terminal

connection to £3,300 for a 9,600

bps Dataline and £10,000 for a

high spead 48K bps Dataline.

Transpac equivalents are £436.

£1.257 and £8.613. Dotaline

connection charges range from

A call duration charge of 23p

an hour is made, and if access is

via the telephone network from

a chorecter terminal, then

occupation of a port on the

packet essembler disassembler

PAD costs 65p an hour or £1 on

hour for 0 300 bps or 1,200 bps link on top of the currant charges for Datel services on the

For dial-up access a network

user identifier is needed, to input

to PSS before a call is allowed

and these cost £5 a quarter each

PSS seems to show more

favour than Transpac towards

olume transmission, although

it has oftan been said that it is

difficult to chorge for interactiva traffic on a packat nat without

making volume use, such as for file transfers, prohibitive.

plus £25 to connect initially.

telephona network.

Transpac equivalents,

£200 to £2,000.

firms to see things the government's way. The principal stick would be the withholding of At issue would be how much financial assistance to firms whose plans did not tie in with government priorities, but other abilities would be price con-

> tracts and state purchasing Peter Hall added that ICL was n favour of close co-operation feel that the firm's current good relations with the Department of industry would be helpad by any statutory compulsion. "We

trols and withdrawal of con-

been unhappy about co-operating with National Fconomic Development Organ-Post Office publishes tariffs for packet switching service

sation studies in the past. The Conservative manifesto mentioned the "reversing of nstionalisation" specifically to do with aerospace and shinbuilding but not the National Enterprise Board which holds shares in ICL, inmos, Nexos, and Insac, Environment

ELECTION

and the customers," he said.

statement on planning agree-

ments, but is thought to hold

broadly the same views as the

CBI, which describes Itself as

"flatly opposed" to what it

regards as "greater government

nterference." IBM is particu-

larly reluctant to involve it self in

anything that entails revealing

llon, and for this reason has

confidential business informa-

tory interference in the way we government would "consider" run the business for the banefit selling ICL to private investors, of the shareholdera, the staff, a move that would probably be

welcomed by the company.
For some time official Tory policy has been to sell off the parts of the NEB's property that are going concerns as aoon as possible, and reduce it to olding company. Prominent Conservatives have aald, however, that Inmos, Nexos and insac abould definitely be retained until they have established themselves (CW.

Training centre

WARRINGTON is the location chosen by Data General for a Europenn field engineering training centre which will include 20 classrooms. The centra will be sited of Birchwood Science Park and Data General plens to provide every field engineer with between four and The charges have a complex structure under three headings; access, usage and fecilities, and involve spokesmen Michael Heseltine 12 weeks of training there coch considerations auch as transmission speed, type and duration of call, type of access and number of said, however, that n future Tory yenr

Kienzle's £40-a-week accounting system

A BOOK-KEEPING and ed counting system for about £40 a week — much less than the ses of employing one account the UK by Germen small

systems manufacturer Klenzie. Celled the Klenzie 1900 end driven by the Intel 8080 microdriven by the intel 8080 micro-processor, she machine le field-upgmdable so Kienzle'e highly successful 2000-2200 series of megnotic lodger cerd com-putem, of which 800 have been installed in she UK and 7,000

oridwide. It includes the processor flat-bed ledger card reader, duel-feed 100 chps metris printer for continuous testonery, 32-charactor strip display for operator guidonce and mognetic sape comoste

drive for program loading.

The rapidly increasing cost of custom software has lod to a royotution in the office computer eceno, and shose days Kienzie says that 70% of the oftware used on its machine is now unsmonded packages. These are included in the price of the machine, which sells outright for £7,000.

Guide to the DP hustings

your MP could well make a wel-come break from choosing a new computer. Making the right or rather, correct — decision in both cases, will affect the DPM's ilfe for the next four or five years.

Unlike most other industries, computing and politics seldom interface. In order, therefore, to inject some much needed reality into next month's election, Focus presents his Easter Gulde

Given a free vote, most DP managers would support the party promoting the abolition of late night shift working, the simplification of psyroll and VAT applications, and the provision of company cars to all DP executives. Any party auggesling a referendum on field engineering services, would receive full-hearted support. A distinct DP vote-catching policy would be to encourage the appointment of DP managers to the boardroom.

Unfortunately, such sound policies are unlikely to be a feature of the election involvement in politics is limited to the in-, staliation, Many sanior company managera balieve that their DP team is far too Conaervative in implementation astimates, too Labour Intensive. and too Liberal with company budgets. Politica ususlly consist of appeasing user departments with promises and future good

in the current political scene. fringe or minority parties are becoming standard practice. So maybe this is an opportune time for a new computer group to be formed as a mesns of gaining national recognition.

The industry is certainly not short of personalities or talent. President of the proposed DP Party could well be Ron Yesrsley of BiS. Not so long ago, he was suggesting in Computer Weekly that the DPM was a relic of the dinosaur sge. Now he is quoted as saying that the DP menager is one of the kay contestants in tha corporate struggle. Such a rapid cnnversion and flexibility of mind

for the laader of our Porty.
Deputy leader could be Alan should be channalled into servants would be implemented representing the complete DP Shirley, appointed leader of the personal information files.

become apparent. Item one on country.

would be essentist qualifications Benjamin, the tireless head of ndustry, in this liberated age,

political challenge.

iDPM would be co-opted to es-

longer would State Instellations be required to choose iCL, which would be required to cooperate with both user groups and PCM auppilers. Busic coinputer education and training would be required school aubjects. Computing "O" and "A' levels would be introduced as soon os possible. Ted Cluff of the

matics Department, becomes

The end-result of this

approach to computer education

will, hopefully, be pupils who

view the computer not as an end

in itself, but as a tool which can

be used to help solve problems in

different disciplines and u

Such familiarity breeds not

contempt, but acceptance, in

much the same way as the cal-

culator, the typewriter and the

telephone ore accepted as tools

of everyday life. And that,

surely, must be healthy, for de-

splie the power and the

ubiquitous noture of the con-

puler, it is a machine, and a

machine is neutral. It is what

man does with it that matters.

And the recognition of that fact

is, of course, what computer

education is all about.

variety of situations.

tablish "prectice!" ocedemic At the some time, the IDPM would be required to set up nn examinotion of government computer avstems. Almost to ur installation, it is the State computing activities which are bringing public apprehension and disrespect. Thosa £1m phone and gas bills ahould have been intercepted at source. the CSA. His dedicated activities Crash coding courses for civil

urgently. ... Privacy legislotion would attractive candidates are hopefully be exposed for what it needed. Maybe Mra Steve is the unacceptable face of all

Meahwhile, Focua awaits a cali from the editor, of Hansard. The consequences of such a A spot of realiam in that journal powarful DP lobby would soon would be walcomed by the

1984 and all that . . .

CONTRIBUTIONS are walcome from readers to our column of the stranga things people say in the media about computers. We will pay £5 for each item we publish.

a super-efficient typing machine — complete with its own memory — to the latest technological gadget to be installed at the massive County Hall office complex at Preston . . . A county council spokesmen seld, "The machine has a visual print-out and makes it easier to use than Lancashire Evening Post

DIGITAL MICROSYSTEMS DSC-2 LOW COST COMPUTER SYSTEM INCORPORATES:

More options for ICL users • From front page With most of the product

Computer Weekly has consisond Mats, e t900 and DML/3

tently promoted the view system marketed successfully over the past 10 years - thut by the company in Sweden. computer education matters, There have olso been new releoses of MTS and TP Option. the former available immediately and the latter available from the middle of the

Though few details have yet been announced, ICL has apparently given serious consideration to forward compatibility in selecting mid deveoping the products which it says provide "o cicar develop-

ment puth for users".

digita

application programs an se ten as Independent Cobile RPG programs and "cat transferred to s new entire ment independently of a monitor". TP monitor; tability is also provided, key

Wikes

From £1395

From £ 2395

From £ 865

From £ 550

From £ 1281

TERMINALS

LS120 DECwriter KSR Terminal

Texas Instruments 745 KSR

Texas Instruments

30cps Silent 700 with Acoustic Coupler

Portable 30cps with 20k Bubble Memory

Teletype 43, 30cps Table Top Terminal

Hazeltine Video Terminals

Hazeltine Video with VT52 emulation

Pericom 6903 Video 132 col x 24 line sa sel

Quma Sprint 5, 45cps dalsywheel ohat plints

ALL PRICES EXCLUDE Y A.T.

Wilkes Computing Ltd.

VT100 Video Terminal From £1195

COMPUTER WEEKLY

HONEYWELL launched a by

pronged ettack on the European market with the leunch of the H3200, which used only w

was simed at user with an trailed systems, and the kin mind at mini users, parlicular those with scientific and constitutions and constitutions.

applications ... A test est verter, the Medei 4201, wa

launched by Friden, it is

paper tape and wrote it or t

Work was about to begin on the Swenness Vahicle and Licente

Centre . . . ICL won a £80,00 order from EMI for the sufany

tion of its ordering, despeta

Bystem 4/40 and a System (

APRIL 17, 1969

The volume charge is 23p per kilosegment, or 1,024 × 64 bytes, with a minimum of eight Although the company is longer be marketing Teles: segments of 64 bytes charged per successful virtusi cail or four puling's TPS, existing asers. egments for an unsuccessful continue to receive full mic: call, unless the fallure occurred la a Post Office network, The nunce and support. Telecomputing has laute: equivalent Transpac charge is Up per kilosegment, although it is quoted per kilo-octet, or 1K a subset version of TPS, wt. used by more than 200 %

byte, with only a 1 segment Apart from the volume charge, tariffs on PSS ara generally higher than for ranspac. The annual rentals for Ostalinea, the parmanent synchronous links to the packet

witching exchanges, run at half -Transpacis open

AFTER running a limited service since December (CWI, Januery 11), Transpac is now officielly open, h has 10 awitching nodes based on TRT CP80 modules supervised by six control centre using Mitra 128 minis, serving 70 users with located lines and 80 who link Indirectly via the talephone or tetex tervices. Another 300 hove applied for connection.

Present capacity of the network of 1,800 users, but two more packet switches are to be added soon and in 1980 the capacity is expected to reach

especity is expected to reach 4,500 users with 25 switches. by 1985 the pian is to reach a between 40 and 100 switches.
Transpac president Yvon Le
Bar thinks this could easily be
stoeded, since the service is sing simed at small to medium #see with 200 to 1,000

International nodes are pigned to provide links to sure and the US before the end of the year.

Civil Service STRIKING Civil Servants are

action (CW, April 12), at the end of this month following a racommandation by union landers to accept the latest government pay packaga.

The first stags payment proposed is 9% plus £1 backdated to April 1, a further 5% in August, with the balance of Pay Research Unit estimated increases on January 1, 1920 The extra £1 will be available only to those earoing less than Increased allowances for sys

tams analysts, programmers and operators will be £250 after ona year's service, £450 after two yaara, and £750 after threa yaars, Previously, these were £150, £300, and £750 respectively.

Datasaab first year figures

Nthe report on the progress of agreement, has been covered by Datasaab AB, tha company tha joint owners, Saab-Scanis of the covered by

Datasaab AB, the company balassab Division of An additional contribution of (CW, March 29), the figures by Saab-Scania and the Swedish government by Saab-Scania and the figures by Saab-S

es and software operating system

Our new systems outdoor, the translation of the communication system called starts with:

- main memory of up to 1 MILLION BY ITS PRIMENT provides complete local and appropriate for up to 32 SIMULT ANEOUS remote network facilities and a distributed. processing terminal executive, IDPTX, all PRIMI computers.

The PRIME user plan features the industry a first processor trade in plan. If the PRIMH system you start with needs more computing a ower you simply trade in the central processor

1. For more information on the new PRIMIT 750. Atichael Grant

Prime Computer (LIK) Lad The Hounslow Centre Lampton Road Floringhay Middlesex or telephoge DI -572 6241.

Mainframe power at





The new computer introducing the PRIME 450 - designed especially for builders of small business system and distributed processing systems, Together with the new 550, 650 and 750 models, these PRIME computers establish new price/performance standards for the interactive multi-user applications.

Pentures you can use now Our new systems builder, the PRIME 450 support for up to 32 SIMULTANIOUS

USERS

12 MEGABYTE certridge disk 2K BYTE cache memory 32 MILLION BYTE virtual address space

Maximum software compatibility Each of the four new systems uses the same PIRIMOS.

A single version of each industry-standard language including COIIOL, FORTRAN, BASIC, and PL/L is ovaliable together with powerful CODASYL compliant DATAHASI:

provides an IHM 3270-compatible interface for

for a faster one.

CONTRIBUTION IN CONTRAINS

minicomputer price

ADMIRALTY SURFACE WEAPONS ESTABLISHMENT PORTSDOWN, COSHAM, HANTS.

A MULTI-ACCESS DIGITAL COMPUTER

is required by the Design Olviston of ASWE. The proposed system will be used for the analysis of etructures using the PAFEC linite element package and the PAFEC interactive graphics system: it will also be used for the generation of 2 and 3 dimensional drawings using GINO-F. Applications for copies of the Operational Requirement quoting CEH/33 Control Computer Agency

Room \$22 Riverwell House

Represent March 11 Conditions 1 ARTH

Proposite must be received by 24 May, 1979.

Tel (0272) 290651 or 25921 Teles

"Certainly sir," Christine would reply in her best lcicle manner, "Would you like to talk to me, or perhaps our engineer?" pointing to Llz

I meekly suggested that tions stemmed not from misogyny but bltter experience. On each of the two previous stands i had visited I had asked the woman de-

Eccentric nosedive

OH dear, I've got some groveiling to do. My piece on April 5 claiming that an alrliner could not have an offset nosewheel turns out to be a load of cobbiers. My aviation correspondent assures ine that Tridents do indeed have such a nosewheel, and that although when the brakes are on, the asymmetry does produce an effect tending to slew the plane round, this is so slight that the pilot can easily compensate for it with his steering. My apologies to our artist

gave me an answer that was flatiy wrong and the second said she would have to get an engineer to phone me. This Chriatine greeted with

her famous dupiex smile that is both disarming and withering at the same time. Anyway, more power to her elbow, I say; the sooner people like her and her team convince more women to take an interest in matters technical, the quicker that problem will disappear.

With superb timing, the head of a Case salesparson (male) who had dropped in on the stand poked out of a back room. "Would you like milk In your tea, Christine?" he

IF YOU'RE

FOR OCR.

LOOK NO

OCR ScanData systama are

of Europa every day. Whatever that

tha sama standarda of accuracy.

appead and control that have made

OCR SCAN MILLED

lailor a system to lit your naed with ... Position

aiza of your company, we can

reliability cost-effectiveness.

OCR ScanData Ltd. ona of Iha bast known names in Optical

Character Recognition.

Oplical Character Recognition data entry systems. From a simple for all sizes of busineeses browness compact CDC data anily throughout the length and breadth

and to lrate aircraft buffs. The explanations I was given for why the wheel is offset are interesting, though. Some said the strut has to fold up sideways to clear the luggage bay. Others said that the automatic landing system is so accurate that were the wheel in the middle, it would bump up and down on the centre lights of the runway. Aeroplanes are so much more romantic than computers aren't they? They even have their own oral mythology, with opposing camps.

We must see to it that programmers are trained in their craft

the contributors asked why the science, or a craft? Does it really paint of view. shortfall of programmers was so inake sense to send someone on large, though one did comment course" and then expect proon the fact that st the time there ductive work? were over a million unemployed.

There are, i believe, two main reasona for tha shortfall, one of which is not hard to find — the ndustry is growing at a far faster rate than the educational system, and too faat for management to invest in expensive training. We need programmers now!

Other commentators have suggested that training is expensive and Inappropriate, and though the government's Tops and Threshold schemes avoid this, we are faced with its comparative ineffectiveness. underestimating the size of the

Perhaps we have the wrong approach, Enough has been written about the inappropriateness of computer science degrees to the needs of the data processing industry to lead one

Is programming really a profession? Do we expect programmers to study for six years, like dnctors and architects, before being let loose?

Do we expect them to practise for five years before granting professional status, like engineers? it really does matter how we think of programming.

OCR ScanData Ltd , Queens House

Tol. 01-891 0158

to ask: what are we trying to do?

All this betokens n certain finiliarity and appreciation of systems - their functions and ucumantation.

He must understand the function of a program, its position within o system and relotive Importance, the trade-offs of timing versus afficiency! how much time to write efficient ende; will inefficient coding to suit the company and the grossly offect the program run (is it run daily, weckly, yearly?). He must be cognisant of pro-

case of use or otherwise. ding and using layout and clinracter conventions, and knowing something of data pre-

He should know how to dryrun or deak-check a prngruin, how to run his progrum on u computer, the ins-ond-outs of debugging — this last ainne demands familiarity with the programning language and the fo-

availble software: with program development aids such as finw-charters, decision tabla prepro-cessors, and cross-reference generators; with utilities such aa consolidators, loaders, library manipulation programs, aorts;

He should know the contants and apacifications of subroutina libraries, ba familiar with the more common packages for his particular computar, such as tha National Computing Centre's

Be abla to exploit the hardwara dependence of his chosen programming ianguage(s) where expedient; be familiar with the operating system, with the job control language + yea, yet another language - most programmers are multi-lingual.

He should ba able to write lobs ilaise with oparators understand the difference bat-

ments cannot afford to pay p. And he should see the user's And what about management

a six-week "programming skills such as project leadership? must keen up-to-date, be willing When we see what kind of to rise above a deluge of activity programming is, then manuals, appendipents, software notices and errors, and new we can be clear obout the form issues of operating systems and readers are or have been pro-

grammers. Just why have Do we readly expect program-

By Jonathan Hamilton

The shortage of programmers must be tackied. JONATHAN HAMILTON, one of the team at the South West Universities Regional Computer Centre Implementing the RSRE portable computer for the Avon Universities Honsyweil Multica system, ergues that programming is a craft, and that everyons in the industry must tackle the problem of training.

training schemes falled to pro- mers to learn all this in 40 vide anything like the number of

those with a glit for it? is it it

training should take. Not all

. A practising programmer is concerned with documents. not necessarily in this order). He must be able to understund specifications, and create and maintain them; to discern gaps in specifications and be able to ask the right questions to fill

gramming methodologies, their ppropriateness to the job, their He should be able to code to specified atandarda, understan-

He should know how to has the ability to be a Di munugenerata test data - whether to ger, but we are gelting to the use test data generators — and

ibles of the interpreter/compiler. He should be famillar with the file handlars.

Filetab — anothar language. He should know his computer!

nacros; manage files, submit wean production and daysiop wean production and daysiop ment environments; priorities; scheduling and timing.
He should know what a program look like from the operator's point of view, and the control of the control

Many people when asked who should do the training say in essence "not me": the government, the NCC, or the BCS, or a "body". Before we can decide on who, what do we require of programming training?

First, it should be up-to-dute. This, if they are to train, is a sizeable problem and the government is aware of this.

Second, it should be therough: a course to teach a programming language is not a pro-

Third, it should be productive: that is, trainees should contribute mitterfally right from the stort. Who knows best the dayto-dny requirements of the job? Fourth, it should be "tallored hullvidual", so mass programtraining.

ming courses will not do. Fifth, it must be economic. cruft, makes sense. No one of it must be faced that no purt prects a mason or a carpental of the industry is expendable. I be proficient in 40 weeks of the not think that the "ever esyear, or even two years. caluting sulary levels" men-The approach is simple: 4 tioned by D. J. Cowtan, (CW,

complete equivalence fa November 30, 11178) are an adgovernment training schere intrable objective. and in common with accor. The current situation is depthree for post-graduates) & orable: not every programmer we should expect every upper tice to serve at least two years point where many programmers are pald more than DPMs with

granimers, and are forced to agencles charging high pio So where should training to place? There appear to be the

options: training establishm like universities, colleger g firms in the industry toler departments; and, lastly, or

What kind of training On reasonably expect from the places? Training establishmen are perhaps best filted to sevide extended courses - m gramining languages, opening systems, special techniques methodologies, or specific courses on aspects of compate science.

Training departments of provide the necessary busing appreclation courses, or the computer appreciation course Above all, any recruits to 16: using a computer should he computer appreciation connot just those destined to a the computer department & lastly, who better fitted to g vide on-the-job training this: the programmers?

Yes, we must all bear brunt of training. The solur lies not in their hands, 44: The other reason for

shortfall of programmers c.. now he apparent - profit inling is a craft, and as is requires a five-year appr ticeship to common with an other crafts. Our fallute appreclate this has led for Introduction of Irreless: Programming regarded at

Bexleyheath Library is also

A BYSTEMS handbook and fixed prices for hardware relecations are two banofits for IBM cusdetailed, but the handbook elso contains a bibliography of IBM manuals that provide a lot more tomers in general that ISM in Europe has introduced recontly, and they come about lorgoly as o result of pressure from third party issuers, seconding to Eciat pre-sident Parry Mitchell. But the hendbook provides no price information and cannot be compared with the massive con-suitants hondbook published by Mitchell agreed that I BM must have decided to introduce them before Edist got off the ground latelist year, but he belloved that IBM in the US.

Lessors seeking EEC

But Parry Mitchell, president

of Eclat, told Computer Weekly,

"I have been to Brussels and the

directorate has indicated that

iBM would not be prejudicing its

positinn If it revealed its prices to

to the director-ganeral of re-

strictive practices asking for the

directorate's view to be put in

writing. I think there is a 50/50

Mitchell pointed out that the

chance they will respond."

nicils practices, that have been US government takes the

-Pressure from leasing firms-

brings user benefits

"It has now formally written

used to depend on the number of hours it took IBM's angineers to move and install equipment, but now IBM will quote a fixed charge for sech item so that the The systems hondbook is almed at IBM DP customers in general and comprises about 200 look last pages of product infor-

Library online to databanks

fering online scceas to databanks is Bexleyheath, which aims to augment its Small Firms and Business information Service. initially, access to the British Library's Blaise service will be provided, extending possibly to infolina and similar sys-

empisiets from individual

ice on IBM.

for withholding its rental and

lease prices from Europeen

leasing companies if the EEC

responds to a request from the

European Computer Leasing

iBM insists that it would be

violating articles 75 and 76 of the

Trealy of Rome if it revealed its

prices to third party lessors be-

cause this would be interpreted

as collusion and, therefore, anti-

competitive. It could also pre-

ludice IBM's poaltion with

regard to the EEC Investigations

and Trading Association, Eciat.

Searches will be carried out on a dial-up terminai by library staff, whose time will often be saved oo short searches, in which case thera will be no charge to the "reader". For more complicated searches involving significant amounts of computar line the costa will be passed on

JOINING the growing number Involved in a research project with the British Library on the use of Prestel, for the public, for library staff, and as an informawith "community information" such as directories of council daparlments, emergency services, information on schools and libraries, where to find the Citizens' Advice Bureau, etc.

Analysis 1 agent

iN the UK Paradyne's network control system Analysis 1 is marketed by Case. An incorrect agent was named in the articla on technical control networks

of information a help over IBM's prices major election issue

> FREEDOM of Information has become a major issue in the Canadian General Election, in which poiling takes place on May 22. Joe Clark, leader of the opposition Conservative Party, called for a

Freedom of Information Act in one of his first speeches of the The ruilng Liberal Party had romised to introduce a Blil in Parliament by the end of March, but the election had been called before it did so.

is published by iBM in the US and which comprises about 4,000 loose leaf pages in four volumes crammed with detailed information on just about every iBM hardware and software The handbook also includes

Mitchell explained, "At the moment we have to ask a

prices. While the EEC regards

the exchanging of prices be-

tween companies as snti-

holding of prices in the US is

seen as monopolistic and a re-

striction on competition. The US

Justice Department inslats that

looks like making a major con-

cession to Eclat by providing Eclat members with the invalu-

able consultants handbook that

However, IBM in Europe

IBM publishes its pricea.

iBM's European manager for industry relations, Peter Owden, told an Eclat meeting in Paris earlier this month that IBM wantad to make the consultants hnndbook available to Eclat members, but at the same time he reaffirmed IBM's European policy of not revealing its prices.

Encore for micro torum

all IBM's US prices, but these are of little value to third party lessors in Europe. potential customer what prices microprocessor

proposais, which it was felt would be half-hearted, the MOTOROLA's highly successful Canadian Bar Association has Microcomputer Forum, which drawn up a model Bill last year packed the Institution of Electrical Engineers lecture incorporating several novel features. Moat notable of these la the requirement that the theatre to overflowing is to be held again, at the same venue, informatinn Act would take on June 4. Among the ottracprecedence over all other tions will be Tom Gunter. existing Acts that require Motorola's manager of adinformation to be kept secret documents could be will speak about the 68000, 16-bit withheld any longer except those in the exempt categories peripheral devices. specified in the new Act.

there is no mention of "national security," a term which the Canadian jurists thought too all-encompassing. Instead, 'national Progressive international relations" are exempted, together with "law

COMPUTER WEEKLY, April 19, 1979

In anticipation of the Liberals!

Canada makes freedom

enforcement and legal proceedings." The latter category is specified in some detail, however, keeping secret such documents as might expose confidential sources. endanger the life of a low enforcement officer; interfere with enforcement proceedings

In the six exempt categories

Specifically not exempted, though, is information indicating that the police have exceeded their powers or followed illegal law enforcement pracedures. This provision could particularly tricky to

in unother area, the Canadian proposals exempt "policy advice," namely opinions, advice and recommendations put forward by officials.

isn't everything

At Datasolve APL is one approach to successful modelling.

Not the whole approach. Not the only Because we look on APL not as a

programming language but as part of

service-based modelling environment... Accessible on-line from a far-flung network at major centres in the UK and Holland giving local access.

Supported by a team of dedicated APL experts including modelling consultants. Enhanced by arrange of APL-

orientated products including Datasolve's Financial Planning System (FPS), our APL

Graphics Package and access to our other management products such as our Total Accounting System (TAS). Complemented by database management products like Datasolve's

Ramis II and IDMS. For details about Datasolve's services and the economical data storage arrangements for high-volume on-line users, return coupon to:

Product Marketing (APL) **BOC Datasolve Limited** 59 Church Street Staines Middlesex TW18 4XS Telephone: Staines 61644

What makes the PACE Exhibition so special? Davoted exclusively to Paripheral Herdware A graet way to pet beok business efter summer holidays · All the facilities of All the rections to the left of the l Trade only lest you the to the right people: Peripherals Exhibition at the Centre Exhibitio

Are you keeping PACE with peripheral developments? Of course! I'm going to the new Peripheral Exhibition in September

Datasolve Database products **BOC** Datasolve

APL at Datasolve

[] Datasolve APL products

system to a sophietrootad. Cummins system that will read, process. From ScanData Mixad-Media systems that will handle a mass of larga Ivpa-writen, imprinted or line-printed documentation and oata, to the ScanDala ALPHA OCR system that reads and processes AlphaNumaric Handgrint direct

OCR ScanData Ltd. apacioliza in

government ogencles concerned with the energy problent and with exploitation of natural resources. SRI International's Prospector program gives intelligent advice, at a cost of about \$10

per consultation, on geological

sites for drilling. In a Privateview (CW March 221 i pointed out that knowledge-based systems mark a break with past computing history by adding two new user modes to the traditional execute mode.

In execute mode the user poses problems and the system computes solutions.

In the new modes, which are essentially "edit" modes, the user nots as toacher, augmenting revising the system's store facts, patterns, and inference rules; or he acts as learner, rummaging interactively in the system's knowledge-bose in order to augment his own expertise in

Faaturea of Digico Range

54 perpheral channels in total

nun baich work

331

a) fulfil a. b. c. d. simultaneously

8 DMA Channels

Systems from £5000 to £200000 totaty soliware compatible in both high and low level languages

Upwards expandable from 1 user to 32 simultaneous users - no HW or SW redundancy.

Standard CPU teatures of multi-level interrupt, direct mamory access, memory partitioning, control panel, real time clock, automatic poolstrap, mains fail detect, mains fail resport, feletype

As an ICL FEP (7903) it can run up to 32 terminate and drive interactive BASIC simultaneously.

Auto dial - auto answer telecommunications intarface evailable

Telex No. 825508

Digico at Harrogate, North Eastern Chambers,
Siation Parade, Harrogate, North Yorkshire,
Tel, No. (0423) Harrogate 501447 Telex No. 67848

Program our micro compelitivs system - upgrade it onto

CPU Memory Irom 16K bytes to 2000 K bytes - 360 nano second access 116 bit + pontry)

O als transfer capability up to 2000000 byles/second simultaneously with processing

Typically, the execute-mode user and the teacher-learner users are different people. Theperson seeking solutions from Prospector is likely to be an

the topic-area.

A NEW "expert system" is exciting Interest among US mining and prospecting corpurations, as well as in US.

MICHIE'S PRIVATEVIEW Making a break with past

> to be an economic geologist hired by the company to build, validate and tunc Prospector's base of useful knowledge. The learner-user may be the same specialist, or another geologist interested in picking up some of the first geologist's specialist knowledge in machinerefined form

Interaction in teacheriearner mode between a domain apecialist and an expert systam entalls of necessity that the dialogue be conducted at the same conceptual level as that to which the human specialist la intellectually accustomed.

This in turn imposes a profound and far-reaching requirement on the structures used to represent speciolist

They must embody descriptions of the domain corresponding closely to the human's executive of a mining com- own mental descriptions.

DIGICO COMPUTERS

the best of British for thirteen years

We beliave you will agrae with us when you check the list below. As a computer user you need a system with

the widest possible range of applications and sizes. You also need security, power, e wide range of

peripherals and interfaces, total range compatability from micro to huge megaminis and the software to tie it

all together. all together.

Check the list and compare it with the system you use now, and measure the result.

Festures of Digico Ranga

Representatives In 15 countries

32 Slot multi-program executive

Floating point hardware

- Ihen attach remote users via modems and - double the disc capacity. Whatever you do, your initial

investment is protected. Your systeme can upgrade on site.

This is all available on a system granted a design council award for "significant achievements in design" and le manufactured by an entirely British owned company based in Stevenage. After thirteen yeare we are now one of the fastest growing computer manufacturers in the UK and with massiva eales to both the Government and

private sectors you can be sure of continuous investment in reesarch and development and production.

Are you using the best system, if it is not DIGICO, then seriously we doubt it? Check the list and give us a cell at Stevenage or Herrogate. Bring your own benchmerks — compare prices, if you are in the buelness of profitable, successful computer installations then you're in the same business as DIGICO.

Digico at Stevenage, Wedgwood Way, Stevenage, Hertfordshire SG1 4PY Tel. No. (0438) Stevenage 4381

Over 1000 installations across the world.

The 4th and most advanced generation of systems, 13 years of

Design award in the company of Sniish Rail. Ford. Philips etc.

Choice of BASIC, FORTRAN, ASSEMBLER, MATHCHAT, LABCHAT, plus user supported languages.

Full range of analogue/digital and look interfeces.

Olse capacity of 0.3 M bytes to 200 M Bytes

Full printer specking as standard leature of BASIC and FORTRAN

Enough CPU power to dwarf most other systems in the same price range.

mini and end up on our 20 terminal megamini

and grow

and learner mode became

A representation of a complex domain, which gives high execute mode efficiency, scores a success in terms of traditional computing. If, however, Its problemrepresentations fall outside the 'human window'', then, as an expert system, it is a nonstarter.

Such a program may not anyway have been intendad for teacher-learner use. Then there is no discredit. Don Beal of Queen Mary College, London, has accompliahed a tourde-force in the form of a program which assigns to any King and Pawn versua King chesa position the correct dlagnosis "won" or "drawn" (if you think that is easy to pro-

gram, try it). His chosen representation is a decision-table driven by some 50-odd patterns. This, domain into a larger number of mailer conceptual slices than the chess expert's brain dnes

when encoding the same task. The result is that, although the program performs the task with exceptional etticiency, iiiapection of ita Internul representation leaves the chess expert mentally in the dark.

To him it is all gobbledy-

gook, which he can nelther augment, criticise nor revise, nor can he draw any chess wisdom from lt.

Max Bramer, on the other hand, working ot the Open University, has developed a representation uaing just 19 patterns. These correspond closely to the chess-master's own descriptive concepta.

Hence although its execute mode is relatively inefficient, its teacher-learner mode is superiative - an "expert aystem" in miniature.

What kind of language



knowledge-representation, or "advice", lunguages, tine school of thought sees English as the ultimate desideration. Certainly in the commercial world of large databases. which have certain aspects and problems in common with ex-

pert systems, impressive beginnings have been made. A US Defence Department clerk types: "What US ships arc within 200 miles of Nuples?" The screen lights up with: "The Fox and the

"Show them to me," the

learner mode? Some projects

have developed special

On the screen appears a map of the Mediterrancan, with glowing dots representing the ocations of the shins.

Interaction here is with Lifer, developed for the US Navy as a combined operation of Gio Wlederhoidt's university project studying large databases and Earl Succeedati's artificial intelligence group at SRi internutional, formerly Stanford Research Internatio-

More generally available is Larry Harris' Robot system, now murketed by Artificial Intelligence Corp in Bethesda, US. Business users type such querles as: "Print me a report on the 1975 performance of regional sales managers, broken down by Item, region and gross profit," or "Whit is the greatest sulary paid to any girl machinist in the carpet department at the Landsville

in my own triols of Rubot I have formed the apinion that It

is fairly easy to confuse h that is what you set yourself tles. But If you intend serior database-interrogation on practical basis, then its m

parases are helpful and to a if it falls fully to undersing your query, it immediately in dicates what further blut of clarification will enable a

Realistic costs are a few ist lars per query. Celculation of comparative costs of convertional systems leads to the &c. lowing guesstimates:

OLD WAY (

programmer-hours per query CONVENTIONAL DANS (45 minutes per query): ৯৫.

Many roads lead towns productivity. Most of the have an automatic programming orientation d one sort or another. Afti those worth noting.

Hr. ald Tichie

REFERENCES

Hart. F. E., Duda, R. Gree Franch, M. T. (1978) A complete based consultation systems: informational, 333 Ravence Accome, Mentin Park, Californi 14025, USA. Robot Technical Papers (182)

AIC. 4,720 Montgomery Law to thesita, Maryland, USA.

link with Atkins

and is owned by RCA.

General Electric, Motorola, Goodyear, and Lockhead, together with all the US defence procurement agencies.

Assessing Mascet

as Corai, for which RSRE has in procedures and compliar benchmarking tests.

Medical contract

SOFTWARE Sciences Balgium solutions That is the solutions That is the solutions of the case fly ment company Baxter Travence to device a European wide materials management system.

complementary modes of open

particularly to allow me callbration.

and project ach blishment of "scope of

in a US periodi These (Wo



Telecomputing's entry level TP

base of over 200 for its iCL Cobol application code permistelsprocessing monitor TPS. Telecomputing has now launched a TPS subset system under the name TPS-Impact.

TPS-Impact takes its name from its intended area of application, namely cases where an initiai TP systsm must be from TPS act in the facilities provided but rather in the numer of processing options.

In the area of warm restart, for example, it supports just one recovery method, re-processing the message log. The number of message typea is also reduced

1980s are likely to bring major

developments is Cobol program

Such software, which creates

Cobol source code from high

level program specifications.

represents one obvious line of

attack on the crucial problem of

programmer productivity -

Programmer Notes as a vilal

ndustry issue for the forth-

rocessors which accept short-

hand Cobol. Overlapping with

hese, yet offering a consider-

ble extension of function, ore

uch systems as ADR's Meta-

Cobol and JSP-Cobol, which

from Michael Jackson's pro-

* Hard copy

* -80 or 132 column. * 7x5dot matrix

* 5 or 8 unit code

* Black/red printing

parallel Interface

Optional padestal.

* Modam, current loop, telegraph or

For quote end further details, 'phone:-

tes a Procedura Division

thlighted two weeks ago in

PROGRAMMER NOTES

Role of Cobol program

13, 1978).

TREND

Printer 800 RO

generators in productivity

sible for each message. it is thus considerably leas complex than the full TPS sys-

tem while offering total upward

together with the amount of

compatibility. The package, which runs with or without MTS on a 2903/4, also includes as standard one of the latest chorgeable TPS options, Interactive Development System (IDS). Formerly known as Interactive Operator (Software File. October 13, 1977), this provides a complete environment

Emphasising Its status as an

ONE field in which the gram design language (Software 1980s are likely to bring major File, November 9, 1978). generator which takes as its prime input Systematics' pro-

The top end of the range is

formed by systems which can

produce a complete Cobol pro-

gram from relatively simple high

evel input. One example of

these is the Cobol generator

provided by Wang on its 2200 VS

machines (Software File, July

Another similar system has

now come to light in the form of

TELECOMPUTING's move into the entry level market clearly persilela e almiler step taken lest year by Zeus-Hormas, which introduced e low-cost TP peckage called Cadiz to complement its full-acale monitor Cortez |Softwara File, February 23, 1878).

Latest customer for the enhanced Cortez, Cortez-Plus, le Frence's largest bank, Credit Agricols. To be run inhielly on an ICL 1903T — one the bank's eeven ICL computers — the activare will probably be used eventually on two recently ordered 2860s.

entry level system, TPS-Impact, at £4,970, is priced at not much more than IDS itself, currently sold for £2,850.

Further, those buying the package will be credited by Telecomputing with the full purchase price should they subsequently migrate to full TPS.

TPS-impact Is not covered by the company's worldwide mar keting agreement with ICL In respect of TPS Itself and will be for online program developmarketed only by Telecom-

gram and system specifications.

at a BCS Cobol meeting last

month, the first stage takes this'

Input and produces a parameter

file, typically contoining some

300-400 items. These ore then

used in the second stage to cus-

tomise a general purpose pro-

As described by Kit Grindley

possibilities

MORE details have now become available on CA-Dynam/Fi, the Computer Associates package that provides DOS/VS users with file independence and wos launched in the US earlier this vear (CW, February 1).

Key feature of the package is that it enables the block size of a sequential file to be altered without any mudificution to user programs. The new file may either be rc-blocked according to JCL specifications or muy have its block size optimised automatically according to the device type.

At the same time, the software will dynamically allocate either single or double buffering for the

Dynam/Fi also offers support for Vsam, allowing records to be allocated to or retrieved from a Vsain file even when it non-Vsam file is defined in the pro-

All the facilities are backed up Forum. with a file attribute catalogue; an audit trail option; and a report generator program that documents Dynam/Fl file procossing activity.

TO complement Its other software

SPL names head of new database group

By Peter Hewitt

and ennsultancy octivities, SPL has sct up a specialist database group Hackett (left) will be the first mana-

Hackett, internationally known for his work on large database and management information systems, was a founder member of Scicon's database group and had overall responsibility for the introduction of iDMS to the UK.

in recent years he has been a freelance database consultont and

Certification service

WITH the Issue of atundurds once more of vital importance to users, discussions are under way between the Notlonal Physical Laboratory and the CCA which could lead to the establishment of a UK software certification service.

The NPL hus offered to devote its technical expertise in software validation and verification to such a service, and will meet e CCA for a second time carly nvolved in these discussions nelude the NCC, the BSI and the Notional Computer Users

The NPL is understood to have singled out two key oreas for its contribution. One is in checking out high level proto-

munufacturers' networking software, and the second is In validating high-level language compilers.
A compiler validation service

has been in operation for some years in the US. Originally concerned particularly with Cobnl, the service has latterly taken in Fortran too, and in both conformance to Ansi language standards. Little similar work has as yet

been undertaken in the UK, a notable exception being that of RSRE in the field of Coral 66. The NCUF is to present

report, "The status of standards in computing", to the EEC in May (CW, March 15).

cessing program. The output from this phase is a tailored Cobol source program. coming years (CW, April 5). Because of its relatively rigid a generator linked to System-One of the most attractive atics, the systems analysis format. Cobol is particularly aspects of this system is that it method developed by Kit Grindsusceptible to generative techley of Urwick Dynamics and tirst publicised some four years can produce a "protolype" proilques and has already attracted gram very quickly, even from an a number of Interesting devencomplete apecification. The opments in this direction. program can subsequently be An extremely appealing At the bottom end of this tuned to the exact user requirement, by gradually hardening up range are the various pre-

niethodology, Systematics is based on a simple two-dimensional grid of data set dicthe specification. This style of development is tionaries. Thesa define system based on the thesis that misinput and output information in takes are inevitable in any comsome detail and act both as sysplex processing system, and that tem specification and documenmany will not become evident

until the user sees the first out-What has now been developed is a two-stage Cobol program

With the generator, first ver-aiona of the application software can be produced within a day, hereafter entering what is in ffect a maintenance phase. The system of course depends critically on the proforma pro-

grams, which Grindley refere to s "prime cods." This currently axists for three common applications, namely batch processing data yet; batch processing updata; and a print program. The prime code for thase

applications, says Grindley olves the cases once and for all in a general way, and is customised by the ganerator using techniques aimilar to wordprocessing. . .

processing.
Urwick Dynamics has so far implemented three systams using the generator, which it describes as a "padkage for producing packages," The software, though, is not yet commercially available except on a Irial basis.

With proving concarn over

With growing concarn over productivity and a continuing productivity and a continuing severe shortage of programmers, it seems likely that such systems have an increasingly large role to play in the future of commercial compuling. They could also do much to relieva the programmer of what are after all highly repetitive tasks.

Programmer Notes would as always - be delighted to hear from those with dissenting or conourring stews or those with either good or bad experience of such software.

such software.



ESA in timesharing

THE uttractions of RCA's costestimating package Price appear to have been a unior factor in whining Atklins On-Line a time sharing contract with Estec, the European Space Agency's tech-

nical centre Imsed in The Hugue. Estec will access the suftware via un Atkins node in The Lingue and intends to use the Price system to estimpte casts in Its sotellite development und prouuction programmes, it wili also use the puckage to ossist in the evaluation of contractors' hids.

Price, described as a purametric cost-estimeting mindelling system, was originally devcloped for the aerospace industry

it has been actively marketed by RCA in the US with consid- goals". over 60 major users are Naso.

CAP'S Reading office is to devalop a set of assessment procedures for Mascot software undar a contract from RSRE. The work follows proposals that Mascot should be adopted as an MoD atandard in the same way the past developed validation

An interesting aspect of co system, which is run intent tively, in that it offers the

in normal mode, coult computed directly from user-puts. The model can also be in reverse, calculates project costs; this is design

in the third mode, Designation Cost, specified costs are used computs typical program ullows Price to be apply and investigation of feasibility and to the significant bills are significant.

Puzzler

THE Americans are kere politics, and take their politics, and take belitible sidential elections in partial very seriously. All prospects very seriously all prospects candidates become are are names, and some are are names, and some are are immortalised with solicity applicable alphametics.

For example, result years are seeing and stogan.

LYNDON & B JOHNSON

(0494) 40171 or telex 837455. Trand Communications Limited, Edric House, Castle Street, High Wycombe, Bucks, HP13 BRQ

by despatch rider to our Lond

Dublin staff bave CCP (I)

He said, "All the output for the Dublin office must be flashed

and boxed-up by 8.30 sharp by

then collected for transportation

"I prefer operating the Las-

to Dublin by the Post Office Datapost service.

don mechine on the evening

shift as It provides the chance in

The size of the two system

means that the operators on

have a lot of peripheral works

do, aside from feeding cards

David had a few comments

make about those devices He suid, "Feeding cards to the

reader can be a bit of a du

because we tend to get rather

lot of read/compare error of

ticke ages.
"And IBM don't help but

either — the engineer shop

seems to take ages in small and the units don't seem loads much better after he's bet working on them."

But the operators' task will

cased some time in the force hecause the bank place E replare the enrd readers wit

Supply disc readers, which &

Their task will be further

i prafer program

mers who have

operations experience. They will

say "Will you please run this job for me,"

whereas the pro-

grammer with no

operations ex-

perience will say "You must run this

job for me."

completed. Then they have to meet the 8.30 determined

every evaning. So far all of Davids

hns taken place in the com-

their needs end f "It's intended to broaden

room, but plans are in bank

On a more personal levi

place as soon as I've sol house in Oxford, he said.

already on site.

our 1442 reader devices. "Every time that happens, si have to take two cards out of the device and feed them bake The large batch jobs seem to

do some overtime."

the readers, that is,

HINT OF THE WEEK

Study the hardcopy log

THE hardcopy log is a mine of information for the traines operator wishing to learn more about this operating system and

Study it to learn mare about ctudy it to learn mere about the messages leaved by the operating system and to see how the various operating cam-mands are used. Use it to find out the order in which the targe obsultes are not it is nearly. ob sultes era run. It la particuerly useful at installations

of a very high standard.

Op Spot awaits your hints.

Remember, they can be technical or general in content as long as they relate to the operations environment. And we will give £5 for each and published. Please isclude the name and

address of your company and s telephone number on which you may be santected during the

Out on his own—straight from a TOPS course to solo running

Townsend es he epproaches his fourth month as a junior operator at the First National Bank of Chleago's site in White-

He is enjoying the work, obviously coming to terms with the demands of the department very quickly, and is settling well in London, heving re-located from Chipping Norton in

"Yes, i'm very plesaed with the wey things have gone so far," said Devid, who met me in London the other week to discuss his progress.

Working es the junior pertner of a two-men shift tesm, he is involved in the running of two IBM System 3s, providing en online service to staff in the bank's London and Dubiln

The terminals are used by

"wheeling and dealing" on the

Foreign Exchange.
"With ell the money that gets moved about, I reckon the

Being part of a smell tesm has



enabled him to acquire considerable practical operations expractical training at the bank's perience early in his career. site — that's how I got offered Not for David the two months the job - and I learned a lot or so operating printers which

send both in the middle and at the end of

the TOPS operations course at Sorehem-

wood College in Herts. Devid hes been working as a junior operator et the First National Bank of Chicago in London for

early four months, end in this interview

he talks of his experience end impre-

Steva Ward, another of the TOPS

nerd hopes to see Steve at e later dete

n order to find out how he is progressing

sions of the industry so far.

put dp with.

new recruits at very large in-"I have just gone on building on what I learned during my stallations sometimes have to visit as a TOPS student. When I He sald, "As you know, when I joined the bank I already knew, for example, how to IPL the

> For David, a dny in operations now involves running a system without direct supervision. If he

i have just gone on building on what i learned during my visit as e TOPS

unnble to cope with, he calls

He works a two-shift rota for which he receives an allowance cased when a project to insti-printers at the Dublia offices

"Although I don't mind work-ing evenings, I prefer the day shift us it duesn't interfere with social life." he said

Duy shift is from 7.30 nm till 3 pm. He went on: "We start un both machines at 7.30 am and run housekeeping on them until 9 u'clock. The the schedule for each system is different."

On the sp-called Landon unchine, users are brought online under CCP, the Customer Control Program.

He enntlaned: "We sometimes get users calling us up at about 9.30, cumplaining that CCP hasn't been started. In most eases they enn't got into the system because their terminal wasn't switched on enrly en-

In-house programmers huvo lesting on the other system from 9 em tili 1 o'clock. After that CCP is started for the bank's

As regards his deelings with programmers, he sald, "I get on prefer those who have operations experienca.

knowledge of the way the land functions," he said. "You can elways tell the exoperator, bacausa ha will say 'Can you please run this job for David is looking to buy a hos Bayld is looking was a two somewhere in London.

"After you have been at two was for a year, they will are bank for a year, they will are you a 5% mortgage, but I was wait till them. I hope to get wait till them. ma, whereas the programmer with no operations experience will say, You must run this job for me.' It's obvious which ons

eppreciates our problems." The evening shift invoives a lot of batch work and calls for the operators to meet strict

Said David, "CCP comes off the London machine at 5:30

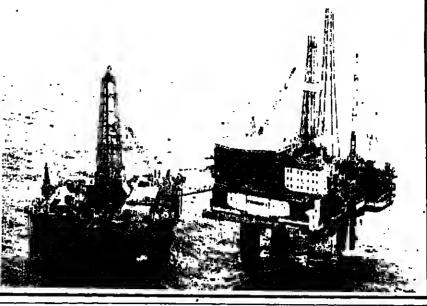
Visits to service bureau OPERATORS often so that noticely listen in point of view, West, Do listen in and Sameto would like at hear your or and ideas or all merces to incompute operations. You letter a head he at Op Spot, Computer 8. Op Spot Compa Dorset House, stamford & London SE 4(1) Telep London SE 4(1) Telep tells pre mile to record tells pre mile to record Serting 2 201 to 251 directly on 0 1-361 absti-

Monitoring oil rig behaviour

A FAMILIAR sight in the North See these days is all production and drilling platferms like Cormorant A and Nortroll, shown here. They belong to Shell (UK) Exploration and Production which has placed a £100,000 contract with Structural Dynamics for a base line measurement survey that will cover the recording and analysis of the vibratery behaviour of 100 places of rotating machinery on Cormorant A and two other pletforms.

The essence of base line measurement is that it seesses how a piece of equipment performs at the start of its life and produces profiles against which

Osta will be recorded an magnetic tape and taken to the offices of Structural Dynamics in Southempton where it will be processed on the company's Prime



Ministers quizzed on medical research

THE subject of the development for medical diagnosis of nuclear for Social Services what help magnetic resonance, a technique which uses radio wnves to lefine the structure of complex chemients, has been raised in the

Commons by Mrs Renée Short. The technique is used to produce cross-sectional images of the human body, including any nbnormellties in the tissues, by inking NMR instruments to a omputer which reconstructs the slices. NMR will, it is hoped, provide a complementary or a even a substitute technique to CAT scanning, without the risk which accompanies the use of

Mrs Shurt asked the Scere-

they were giving research into the technology, and how they intended to assist its commercial exploitation by UK firms.

Alan Williams, Industry Mir ister, replied that the Dol sid would be available for projects public funds to research groups et severni universities, and through government agencies to research by Industry.

Health Minister Roland Moyle repiled that his department was working closely with the NRDC to assist in the development of



Cable & Wireless UKS-A Unique World of Experience in Communication Systems.





Cable & Wireleaa UKS has a total capability ambracing all aspects of talacommunications and data handling systams in the U.K.

A capability backad by unrivaliad expertise and over a cantury of world-wide communications needs. experianca in the Cable & Wireless Group.

A total capability in planning, dasign, Installation and training; in providing hardwara, softwara. systems, natworks. And when the lob's done, a comprahansiva country-wide maintanance sarvice. A capability no manufacturar can match.

And more than that ...

Wa have the widast possibla choice of aquipment from the world's leading suppliers. So you gat the bast package to suit your spacific

We'va airaady enginaered systems for some of tha major organizations in the country. And we can do tha same for you - however large or small your requirement.

Unique capability, expartise and experiance at your service.

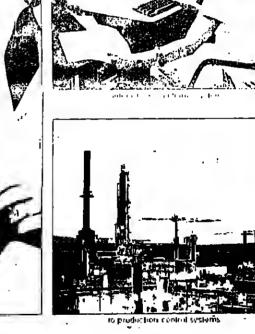
Cable & Wireless UKS Total capability through world-wide experience Cable & Wireless UK Services Limited, 82/83 Blackiners Road, London SEI 8HA: Telephone: 01-833 9374, Telex: 915453

I HAVE had a good response to my request for installations to feature in Op Spot. The first visit, will be to Astral Computer Ser-vices, a burgay in the City of London.











Distributed Processing Control it... with DECnet.

Distributed processing is a reality. ine economies of scele have drama tically shifted from centralised batchoriented machines to distributed, interactiva

processing and networks. Many companies already have. hundreds of distributed computers in laboratoriea, in warehouses, in seles officea, on the production lines. Digital Equipment alone has installed more than 140,000

One question remeins: how to acquire:

and exercise control of data. For is it permit such eutonomy that data remains unshered? Is it reasonable to parmit such independence that all information is isolated, and then duplicated elsewhere, agein and again?

Control is important, and DECnet Is that best way to gain control and exercise it. DECnet is Digital Equipment's networking software. It permits communication among all Digital Equipment computer families using virtually any Digital Equipment operating system. And through Digital Equipment's

family of protocol amulators, you can tia large mainframes - into your network. That network may be configured in a range of topologias - hierarchical, ring, star - i matching controls to your management or organisational style and needs.

If you'd like to learn more so you can develop a strategy for controlling your distributed computers as you see fit, fill out the goupon. Talk to the company that started the Irend to distributed processing.

non-Digital Equipment computers - including | I'm interested in your DECrien system Please send

Position Company address

Name

ielapirona Send to: Terry Clarks,

Digital Equipment Co. Limited Digital Heuse, Kings Rond. Reeding, Berks, RG(4H4)

Digital Equipment Co. Limited

PEOPLE AND EVENTS

Honeywell names **PPS** team

has announced the appointment not the Tom Bune as notional seles manage of Honeywell page printing system. A former manager of major international accounts, Bane will be responsible in his new position to John Macdonald, who is the UK director of PPS marketing. In addition to this appointment, David Hallatt has become a member of Bune's salea or-ganjsation, with emphasis on public sectors and central government. The Honeywell page printing system is operated by the Level 6 minicompaer, and prints at speeds of 8,000, 12,000 or 18,000 linea per minute.

Paul Abrahema has been appointed chief hardware design engineer with System Industrica and Colin Smith software enginee Both men joined the company as engineers in 1977, and have recently worked for SI's perent company in America. New field engineer is Stave Papacharabolumhus, who is the cumpuny's injeroprocessor special sales executive, formerly having



director for network products with Codex. He was until recently markeiing manager for communications and terminals at Data General, and before that was systema engineer and marketing menager for Honey-

Graham Horrts has been nppointed by Redifon Computers as international systems engineer for Czechostovakin. He joined the company as o unil test engineer. For-merly works manager, John Gunning has been promoted to the position of manufacturing manager, while Mike Wildridga, previously a financial programmer with Eaton, has joined Redifon as a systems

Jim Timmons has been appointed by CMC as territory menager for the Weat of Scotland. He joins the com-pany after working for Cybernet Research Conaultonts' Unieshering



Robori Jaffarson has become Robori Jarrarson has become managing director of Perkin-Elmer Deta Systems, was previously general manager of UK operations. Other appointments at the Slough headquarters of the company in-clude thos of Archie Thomas as genemi manager of the international division in Europe. He was formerly deputy managing director, as well as Also promoted to the board is Mortin Watars, who is head of Perkin-

> Lucy Harper, a former junior ays-tems analyst with Redifon, has become a systems supervisor with Ar:

Elmer's European software division based at Slough.

Pator Bryan hos been made equip-ment aales manager for the South and West branch of Memorex. Previously, he was a senior salesman with Telex and befora that was in media sales with CDC.





nounced the appointment of Leigh-

ton Davies as e deputy managing director. He will retain full respon-

sibility as chief executive for the Racal Data Communications group.

Davies hes been in charge of this

division since 1969 when he becami-managing director of Racal-Milgo. He was previously general manager of transmission and data systems

with Standard Telephones and

Cables, and prior to that was managing director of GEC Compu-ters and Automation, in Wembley.

Ashlay Ward has joined London

United Computing Systema as a aaies consultent. Ha waa previoualy a professional works motor racing





Eric Lipscombe has become associate sales director of fiel, with responsibility for Central London Before joining the company, Lipscombe was a senior marketing

Greg Smith, until recently general manager of marketing with CDC, has been appointed as educathur-marketing director and executive director of the Apple Foundation. Before joining CDC, Smith was vice-president of product manege-mont and development at Bell and

John Henry, vice president of pro-duel marketing with Centronies, has been appointed vice-president of Eurnpean marketing. He will he based at the company's European headquarters in London, and will report directly to Terence Harris,

APRIL 19-19
Which word processor, and senting infotech. Regent Centre Ifotel, London

Trade union perspectives, Lan Berson BLS Landon branch, Waldorf Hotel, Lon-

don WC2, 18.00.

Marcani systems, an appraisal of current developments. RUS, Stoke Hatel, Guildford, 19.30.

The new information another RUS South Essex branch, West Chill Hatel, Westellff-on-ess, 19.40.

Severa-side soccer and disco. IB'S Belfast Uprichard Park, Belfast, Details from W and F Heron, tel: Reliast 50415.

Euronet. P. Kelly, Int.S. data com-munication specialist group. BCS head-quarters, D Mansfield Street, Landon W1, 18.00.

APRIL 24
What next in the office? NCC. Calc.

What next in the affice? NCC, Cair Royal, 68 Regent Street, Landon W1. Microprocessors, T.G. Read, Pentewat Rand Laboratories, English Chinn Flay, SI Austell, 19,39. BCS Hanqishire Iranch, Visit to Esso, Pawley, 18,00. Planning for the 1981 consus, It S facal Government group. West Midlands Guanty Council, I Laurester Circus, Hirminglann, 14,69. Please notify serre-ing on III-828 2333 if you wish to attend. APRII, 24-28

IIIM CUA annual formu. Royal Hath

BCS Sussex branch, Visit to British Calculunian Airways, Untwo-k Airpert, London, 1439.

DIARY

AS pan of the expension of its micrographics systems division. NGR has announced these appointments. Bernerd Hartis has become manager of CON salos. He was formerly a CON selesman, after Johning the osepany in 1965 as a computer operator. In his new position replaces Jon Waller, who has become manager of COM sales and support. Pater Meris, povilously o exionsmal in misses. viously o salosman in miss-graphics with the company, he been appointed as disting meneger for micrographic sales in the North.

A chartered alactronics to ginear, Barry Gildar, her be come product manager of the micrographics division. I joined NCR in 1969 as a circ designer at the Berehamir leboratory, and later beam COM development designer

Peter Rysn has been appoint special system sales managerate headquarters of Systmein Leaking was previously with Lucas Age poce where he was most recent ployed as manager of autom icsi equipment.

David Hawkins, previously no-keling manager of Bunzi Telesc munication Services, has been marketing director. Roly Borths takes up a non-executive post out hourd. He is currently many director of Automatic Switcher

Microprocessor-macro consenta BCS North Staffordshire branch hell

Laver, Clayton Lodge Hold Area

under-Lyno. 20.00.
Date protection legislation Kest burgh branch. Heator-Watt University Hungh 18.00.

APRIL 28

Viewdate systems and their has implicutions. Turn Stewart, Points of Central London, Regent Street, London

WI, 18,00.
Computer stded drafting antrology of the 1980's, 1842, computing techniques section. 18:544, Walk, London SWI, 14,30.
Lecture and demonstration. BCSES-Willis branch. PYE TMC Muleubig.

201.00.
The significance of computer & South West branch. Wonford Eq. 1.
Lurack Road, Exelet 19.00.
Lustallation visit, to JW Windows & Lustallation visit, to JW Windows & Curran Road for

South Wales branch Curren Rod !

diff. 19.09.

I remultrised hospital adjacing fects. BCS Medical (Scatinal) sects group, Southern General Hospital Segow, 11.1R.)

MAY Nogoliating computer content Ehrupson study conferences. Candi Conference Centre, Duchess Mentile

Energy saving with micrograms Mirroproressor application group of Saviny Place, London WC2 14th

APRIL.27

MAYI

Chester. 19.30.

and support firm set up

BCPL sales

Satellite copier deal clinched

Meanwhile, the public tran-

sationtic facaimile service for

UK poatal users reported in CW last year (CW, June 15, 1976),

iooks like going live on a trial

basis this aummer, although the Post Office is unable to specify

an exact date. Triala were or-

iginally intended to start last

Called Intelpost, the service

will use the Intelsat satellite and

facsimile kit bullt in the US by Rapicom of California, it will

operate at 9.6K bits per second

one page in less than a minute

which is fast by conventional

standards, but very slow com-pared with the satellite speeds

that SBS is taking full advantage

Interpost will be available in all

London postal districts and

according to the PO it will be run

like the Express Post service.

Letters will be rushed to an

office in central London where

they will be scanned and trans-

mitted via intelsat to either of

two destinations — New York or

Security

service

WACKENHUT UK have cote-

temperature and humidity. For tha ratriovol of informotion, Wackenhut hee o flast of radio-controlled vahicles which

oparata 24 hours a dey, saven deys a waak.

Washington.

systems early next year.

tronic "mail" at the end of the

scond - far faster than any existing facsimile system.

A THIRD Csmbridge-based firm has entered the ranks of those offering to sell and support BCPL software. Called Fendragon, the company is able to supply a number of off-the-shelf CPL compilers, with a notable emphasis on microprocessor

Among devices currently sup-ported are the Texas 9900 and National Semiconductor Pace. An interpreter is currently under development for the Zllog Z60, and further implementations are planned for the Motorola 6609 and Intel 8086.

Other compilers available run under RSX-IIM, RSX-IID and IAS on the Digital Equipment PDP-II and under Rdos on the Data General Nova and Eclipse. Fendragon is at 197 Chester-ton Road, Cambridge.

Patent-swop agreement

IBM and Wsng Laboratories have signed a patent cross-

bilshed a date storego centra at Luton, with a view to opening furthar off-site otorega fecli-ities in London, Monohestor, Glasgow end Bristol in the naer futura. The Weckenhut service provides security for back-up tapes, disc packs, microfilm and microficha in eir-conditioned mognetic madia vaults which ere controlled for etablity of

licensing agreement under which they can use each other's patents without paying royalies. The agreement covers all of Wang's patents and all those IBM patents that relate to Wang's business. It also covers new patents filed up to July 1,

Hays alresdy owna another big security firm, Datakeap,

thich it sequired about two

Safestore's warehouse is on

he bank of the Thames at

opposite sida of the river.

Storage firm bought SAFESTORE, a firm which pro-Together Safestore and vides secure storage for compu-ter media, has been bought by Datakeep offer more than 700,000 square feat of storage the Hays Wharf Group for about space and provide storage facil-120,000, and is now part of the Hays subsidisry, Hays Business

the major clearing banks. LSI contract

IN the first large order since its formation as a aubsidlary of CPU Computers, LSI Computers is to supply 100 System M-One business systems over the next year to TKM Business Systems.

ities for up to 70,000 magnetic tapes. Their clients include all





Standing, appropriately, nost to a scale model of a communications setallite are the chairmen of AM international, Roy Ash, and Philip Whittakor, president of Satellite Business Systems.

IBM figures stun brokers

week by IBM's first quarter figures, which showed net profit up "only" i3.2% at \$667 millon on turnover up 19.4% at \$5,290 million compared with the first quarter in 1972. The fall in the value of the dollar coat iBM \$38 million in foreign exchange losses, a turnriund of \$66 millon on the figure of a year earlier when it scored foreign exchange gains. Gathering Inflation and investment for the future were named as reasons for the modest profit growth by chairman Frank Cary. The Dow Jones Industriai Index fell seven points on the news.

High-speed bookings

INCREASED passenger traffic on British Rail's high-speed service from London to Edinburgh has prompted It to move seo reservations for the service to computer. Consultations with staff are still taking place so BF would not comment on how and from where it was plunning to operate the system, but a spokesman dld say that "it will be run on an existing IBM com-

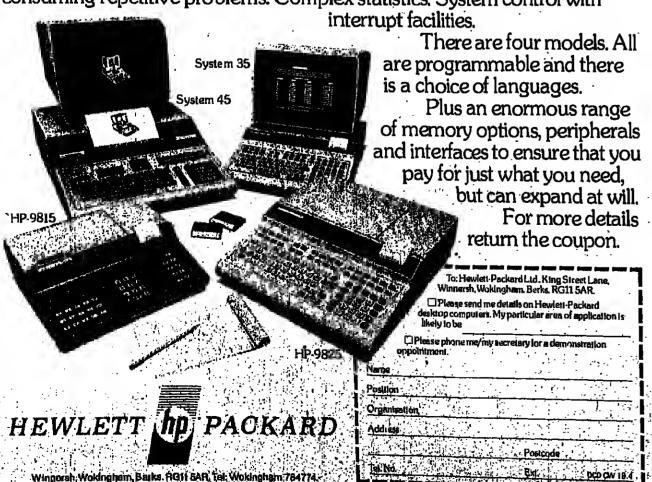
NOW! The power to handle complex calculations under your own control.

Whatever your discipline, there's a faster, simpler, more rational way to handle calculations.

A Hewlett-Packard desktop computer. It works in your department under your control. It is friendly, flexible and responsive. Anyone with a mathematical background can quickly learn to program it. Anyone able to type can operate it.

Yet an astonishingly wide range of problems yield to its power. Including applications you might think would demand a major EDP complex.

Routine calculations and data reduction, of course; especially timeconsuming repetitive problems. Complex statistics. System control with







Reports by Tim Palmer

Zilog offers software multi-package for single board micros

by Zilog. Centred on a floppy disc-based operating aystem, it incorporates a debugging monitor, text editor, macro assembler and a file manipulation utilities.

Available for a one-time-only charge, and therefore requiring no royalty payments for its use in other systems, the software is intended primarily for applications in industrial control, data logging and education, though it is also sullabie for amali busineas

The PROM-based debugging monitor incorporates all terminal and floppy diac drivers regulred for system I/O. Its debug capabilities include break point setting, single and multiple program stepping, jump to specific address, and save meniory contents.

The assembler la disc-based,

A COMPREHENSIVE package of software to support users of its range of single board microcomputers has been introduced and listing files at a rate of computer, it can generate object code and listing files at a rate of 500 linea of source per minute, a rate that can be increased if no listing file is required.

Source code can be read from object code is written directly to disc. Diagnostic messages, how-ever, are transmitted directly to Another feature of the

assembler is that there is no limit to the size of the aymbol table, if the memory allocation is used up, more space is allocated on the dlac and paged up as

The editor is line oriented and can deal with very large files, regardless of the size of available systems mamory.

and Combin, for merging filea.

Flexible disks

from Control Dataset.

Because the major supplier must

megnetic medie to the U.K. computer industry.

seles and technical support force.

e main freme system.

make sense for your major investment.

Control Dataset is the leading manufacturer and supplier of

sense reasons. Including Control Deta Corporation's system/drive/

Media decisions matter, whether you're ordering flexible

disks for a mini-computer or a bulk delivery of disk packs for a

So ring 0438 3322 for further details of CDC end ICL

label flexible disks, disk packs, disk certridges, digital

cassettes and magnetic tape. And get the major supplier

head/medie total technology capebility. The exclusive supply of CDC and ICL label products. And the backing of Britain's largest media

DATASET

More than a Computer Company

Mein frame businesses rely on Control Dateset, for several good-

which the company claims a full 100% performs are improve-

ment over the previously available version.

Called Version 3.0, it permits program development work to be carried out on the intellect Development System for the till program of programs of the program of the full range of microprote MCS-48 family

History of semis

THE Microelectronics Revolution: A Brief Assesament of the Industrial Impact With a Seleced albliography is the title of a new study produced by the Technology Policy Unit of Aston University. The 87-paga report givea a brief history of aemicon-Among the file handling util-ltles available are Cat, for cata-at the many industrial applicaloguing directories on disc, tion areas for the technology. It

Revised MCS-48 Assembler A REVISED vortice of the MCE-48 Mooro Assembler bee produced by letal for MCE-48 Mooro Assembler has been produced by letal for MCE-48 Mooro Assembler has four letal for MCE-48 Mooro Assembler has a "second generation" machine. Thumes itself has so for leaf.

the DAI personal computer, from Arussels-based Data Applications International SA, has already won an order for 1,000 systems from a Dutch educational organisation, even befora its official launch at Compec Europe next month.

The Dutch organization, Teleac, is using the systems in conjunction with a microproceasor aducation course transmitted over Dutch telavision every week. The systems are supplied to students as part of their course material.

Though basically similar in approach to the UK's Open Univeralty, Teleac has been in negotiation with Thames relevision in England, and there have been some suggestions that Thames may purchase the

so, though it is currently prepuring three pllot schools programmes on the microprocessor, tur transmission in the spring of 1980. If successful, a full course will be considered for the 1980-

The DAI machine, according to Data Applications murketing manager Nimal Jinadasa, was selected by Teleac after a comparative evaluation with several other well-known personal computer systema. including the Apple II, Pet and Tandy TRS 80. The decision, in part, was based on the fact that these systems are not true parsonal computers and have only limited applications, he sald.

81 academic year.

The DAI definition for this second generation" machine that it covers a variety of applications ranging from nome use through to a variety of professional applications in the

Based on an Intel 8080 CPU the system achieves this flexibility of application, according to Jinadasa, by utilising the DAI common bus structure. Culled the DCE bus, this makes the system compatible with the full range of single board computer systems and industrial control systems the company produces. It can therefore be used as the central processor in a variety of industrial and process control applications as well as

being a stand-alune computers in its basic configuration, the system comes with 8K bytes of

plug. Secondary storage is Cussette recorder, thought are optional extras.

The prime output medion the domestic TV screen and a make the machine as widehu able as possible, it can be use with all three major color television standards - PK SECAM and NTSC.

The software is a senior piled Basic, which is claimed to be very fast. It is meintain in the system's memory Ha Intermediate code. It provide such facilities as split some operations, and has a 2011 matrix high resolution graphs

Though the software in operate with floating pole maths, there is also an opic of including the AMOSII floating maths chip. A society provided for this in the mac and the software monitors socket for the presence of sence of the chip.

DAI is also independent tracking the same path at Tar Instruments with its up-tonic personal computer introfa tions, by including a speci synthesis capability (CW, Api

The system has a set of s. .. and white noise generaloren: In which can be used factor music and speech synthesk

The price, in Beiglum, in pected to be between 30,000 at 10,000 Beiglan Francs, inc. equivalent to a range of the

Version of Pascal for the micro market

A DUTCH company is nuw selling n version of Pascal pile and run Psscal programs pile and run Psscal programs a minimum of 12K plus 4K nal computer market. Systems such as the SWTP 680, with sufficient hurdware to support the TSC Flex 1.II uperating system, Files, Procedures, Recurst Files, Procedures, Files, Procedures, Files, Procedures, Files, Procedures, Files, Files, Procedures, Files, Files are more than adequate to run programs written in the high-level longuage.

Available from Lucidata,

IC plant set up by Storage Technology

TO complement its \$32 million takeover of the California-based LSI design house, Micro Technology (CW, March 22), Storage Technology has started work on a new 90,000 square foot semiconductor facility at its Boulder, Colorado headquar-

The naw facility will be used to manufacture medium speed, medium denaity circuits, and thin film heads for disc memories, Pilot production, for internal consumption only, la acheduled to start in 1981. A major reason for STC to

move into the microelectronics manufacturing business is the company's need to cut back onth current nine-month dealgn turnround on new devloes currently provided by the aamicon-ductor industry. By vertically integrating its operations downwards, STC will be able to make use of the LSI CAD software possessed by Micro

pile and run Psscal programs a minimum of 12K plus 4Kbz of incinory. The compiler is a written in a subset of Paschi und Scha, aa well as looping La lurnuch constructs. Il ako assa porates aome of the favority inicro functions, such as Pel Poke and User.

One of the more interest nspects of the software a the inclusion of a page mode later. This is a brought in sutemaker if there is insufficient to include the inclusion of a page mode later. memory for a large prosper.
The Pascal completed by P-code Interpretation aystam la provide et a paid aystam la paid a

Versatile system

A COMPACT dask to the ter system capable by being either as a stand slode see either as a stand slode see either as a state as an intelligent terminal as an intelligent terminal largar computer has been duced by Kenner Microst duced by Kenner Microst



ICL corporate director Pater Holl size up the potential threat to ICL on world markets from the first leden-designed sed built mele-irane. A 370/13E-cless machine, the semular, the TCO frame. A 370/13t-cleas machine, the computer, the TDC-232 is under test at ECIL's pleet le Hydershad, surroueded by beeks of angrey buzzing cooling fane.

New printer to be made in Bombay

A NEW printer developed in France is to be the first product to be manufactured by the new Tala-Surrougha company in

Bombay, in which each partner base 50% holding.

The new printer, which is a compact serial matrix device also capable of being used as a leleptinter, will be built for the world market by Tata-Burroughs in the SEEPZ export processing zone in Bombay and processing zone in Bombay, and will also be built either at Cumbenaul, Scotland, or in Brazil.

Teta-Buroughs hopea to begammanufacture within tha next two or three months.

The product to be built by Ttts-Burroughs has changed several times aince the joint tenture first became firm, bacture the command the date. cause tirst becama firm, ba-cause the company is dater-mined to build only naw pro-facts, and institutional dalays in stitus the ventura off the ground meant that one product ther another were into her another went into producfor elsewhere months bafora itsa-Burroughs could begin

minicomputera, the TDC-312 \$1,200 million Tata Group of companias, involved in power and 316 were conceived. generation, have formed a joint The plan is to build six research and development com-pany, and one of the projects at the Tata Electric Companies'

test at ECIL's factory at Hyderabad, Andhra Pradeah, and is, in theory at least, the only indigenous competitor to the 2904S ICL intands to build in

ICL corporata director Peter Hall was a member of the EEC delegation which visited India lust month to examine the prospects for both hardware and software collaboration, and missed no opportunity to complain about the problems ICL is facing in india.

The two ICL companies in Indla, the 100%-owned markating company and the 60%-owned

ternational Computers indian alry and spacious factory in Manufacture. The dilution of Pune. However, the Maharash ownership was achieved by a tra State government has placed rights issue to existing restrictions on new manufacshareholders, and any rights not taken up were offered to stalled grant of the licence. The TDC-332 mainframe in

on the architecture and the Sirls-3 operating system of the Cli Iris 50 mainframe, which Itself was a development of the 4 machines - which would be Xerox Sigma 7. specially adapted to the Indian environment - ICIM is still waiting for the go-alicad from the Indian government. The

the laboratory for development

The microcoding will be done

at the Tata Institute for Fun-

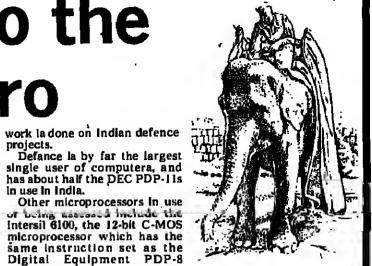
damental Research, the educational and research centre

where Indla's only established

of defence applications.

single user of computera, and has about half the DEC PDP-11s the new machine. It is being developed for two reasons: to give the research engineers ex-perience in bit-silce technology and microcoding techniques, and to provide a tool for use in in use in India. Other microprocessors in use

or being assessed include the intersil 6100, the 12-bit C-MOS microprocessor which has the same instruction set as the Digital Equipment PDP-8 minicomputer, the Intel 8086, the Zliog Z8000 and the Motorolo 68000.



THE MICROPROCESSOR PROMISES TO REVOLUTIONISE THE INDIAN COMPUTER SCENE IN AN EVEN MORE COMPREHENSIVE MANNER THAN THAT OF THE WEST. IN THIS, THE FIRST OP AN OCCASIONAL SERIES ON THE INDIAN HARDWARE SCENE, TIM PALMER, WHO WAS A MEMBER OF THE RECENT EEC HAROWARE DELEGATION, TAKES A LOOK AT DEVELOPMENTS AT ICL, TATABURROUGHS, ECIL AND TATA ELECTRIC COMPANIES.

ICL director irked by delays

present problem is that, whereas

tha 32 1901As built in India were

efits offered by the bit-slice

ment where it is much easier to

get an Import Ilcence for micro-

processors than for a minicom-

can be classified as a microcom-

Several members of the giant

manufacturing company hava now been merged into a single

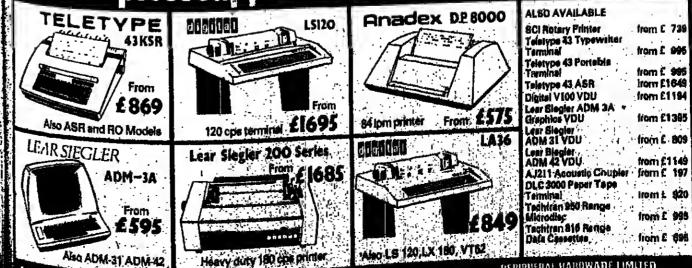
cmployees of the company. A further rights Issue is to be made the picture (obove left) is based shortly to raise more working Granted n letter of intent for a licence to build a hundred 2903/

The architecture has been

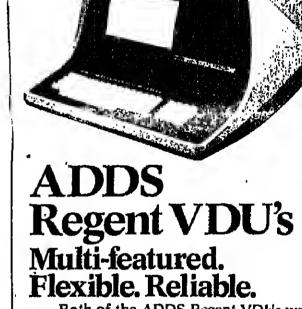
adapted to accommodate IBMtype multiplexer and selector channels, will have up to one Megabyte of semiconductor or

manufactured by Aharat Elec-tricals in Bangalore, the 2904s up to three front-end processors. Russian contracts UNDERLINING the extest to which the Russiae computer industry is making use of indien skills sed resources, all the core memory for Ried computers currectly being shipped from Russian placts is being made at Electronics Corporation of ledis Ltd, ECIL's plact at Hydersbad, ECIL is government-owned, sed is se offshoot of the Department of Atomio. Energy. The contract with ECIL rues for three years, sed our picture shows one of the 64K-byte memory stacks being strung at the big ECIL fectory. Eastern Europe maleframes are is general still supplied molety with core memory, and 20 mil cores are used. ECIL imports the cores from Western suppliers, but everything also is made at the plant or bought le locally. The Ruestens also do extensive system software procurement for their mainframes in lindle, and Computronice, the big services company which acts as agent for the Risd machines in ledle, is since supplying the Russians with software worth £1.2E millios annually. In general, the Russiaes pay for the software with computers, and the value set teeds to be artificially low. Computrosics is no verticless theroughly satisfied with the business raintice the desis. Electronorgechniks, the Russian agency which handles the desis.

The complete supplier *RANGE*PRICE*DELIVERY*



Heavy duty 180 cos printer VACANCIES FOR SALES & TECHNICAL STAFF Amifield Close, West Molesev 01-941 4806 Wetherby 61885 Dublin 971854



Both of the ADDS Regent VDUs we offer have microprocessor-based reliability and flexibility. Each has 24 lines of 80 characters with a 25th "status line" to indicate operation mode and fault diagnosis.

Each hes a complete set of visual ettributes: reverse video, helf intensity, underline, blinking, zero intensity or eny combination of these.

Interfaces are EIA RS232C or 20 milliamp current loop, at transmission rates progremmable from 75 to 19200 Baud. The R100 is a flexible conversational

VDU with 8 optional function keys; the R200 is progremmable for transmission in page, message or conversational mode. and offers an editing option.

For full details, sign your letterhead, clip it to this

Texas Instruments Ltd., Supply Division MS21, Manton Lane, Bedford MK41 7PA. Tel: Bedford (0234) 67466, Telex: 82178, Sales Offices: Bedford (0234) 67466 Exin. 3718. Edinkurgh (031) 229 5571. Manchemer (051) 432 0643. Slongh (0733) 33411.

TEXAS INSTRUMENTS

eckwards and forwards ecrose the right of the track. Stewards in

LEFT — Scicon's Pete Nicholie le out of eight of the reat of the field in the Mene 800 metres race, the lest event of the day. He tied for first piece in the individual contest. The ledies were let off with a 800

The means five taken to finals The miserable weather failed to damp spirits at the Midlands Qualifying Heat of Computations against Sundry and, due to n Associates, Notilegic, Smedley-HP Foods, Leaning a Spir, Press Computer Spir, Wolverhampton; Boet, & Lingham; Dala Schue Hirmingham; Dala Schue

stars last Sundny and, due to a tle In the Mens events, five leams go to the finols.

Held at the New Alexander Stadium, Perry Burr, Birmingham, Ladies tenms from Smedley-HP Foods, 54 points; Safe Computing, 50; and Duta Sciences, 40, join Mens teams from Seleon, 105½; Data Selences, 102%; and, Peterborough Data Processing, 98, for the trip to the finals at Crystal Pslace in September.

Compatition in the individual events was very tight with one oint separating the winners. Thesa were Angle Dunston, Safe Computing with 20 points; Marilyn Broad, Data Sciences, 19: last vear's individual silver medallist Dave Beardsell, Peterborough Data Processing, 28; Pete Nicholls, Scieon, 28; and, Viv Ollver, Safe, 27.

The Nottingham-based Midland Household Stores shone in the Secondary ComAssociates, Nottingto Smedley-HP Foods, Learner

petition which consisted of netball shooting for the ladies and a The traphles were presented

by John Colling, managing director of Wright Air Condltioning who is a en-sponsor of the event with Computer Lodies tesms - Gammn

Smedley-HP Foods, Leading Spn; Press Computer Spn; Press Computer Spn; Wolverhampton; Crant Spr; thumpton; Peterborough in Processing. Peterborough Boots, two teams, Normalist Link, two teams, Droitwick, Midland Household Stock, Midland Household Stock, Midland: Thorn Fleeded Stringlague. tingham; Thorn Electrical is ford; Safe Computing, Leise Seicon, two taams, Mit Keynes; and, W&T Am. Walsall.

Birminghsm; Link, Ordin Spa; Midland Households

two teams, Nottingham; Im Electrical, Telford; Sale (v.

muting. Leicester, and So Milton Keynes. Mans teams. - Gir

teams will meet at the Sports Centre, Crowley, Sussex, on April 29. The competition then moves to the North East, where in May 13 st the Westcliffe Mount Sports Centre, Cleckheaton, near Leeds, 38 teams will

nit their strength and skill for a

Next, it's over to Liverpool on June 3 for the North West heat at Kirkby Sports Stadium, where 34 teams from that area take up the challenge. The last volving 19 teams and, lastly, Thames North st the Copthali Stadium Barnet, North London on Saturday, June 30, where there will be 47 teams.

And then it's on to the final at Crystal Palace on Saturday, September 29, to find the 1979



.00K what we've won! Julie Seaston, captain of Smedley'o Ladies team holds telt the Ladies Trophy efter being presented with it by John Colling (right) managing director of Wright Air Conditioning, who co-spansored the evant with Computer Weekly. With 54 points, Julie's team now takes the high to Crystal Palace for the September finals.





COMPUTER WEEKLY, April 19, 1979

ABOVE — smiles ell round es Pete Grey (left) captain ef Scicon's Mene team eoilecte his teem's trephy from John Colling. On the right is Computatore' organiser Gerdon Ceima who was responsible for running the competition et the New Alexender Stadium, Perry Berr.

Organiser Gordon Ceirne (left) hee his pen reedy to mark core. This event was the ledies part of the Secondary

BELOW — the sterter's gun sets in metion the last event of the day, the Menn 800 metros. Pets lichoile (centre, weering Scio vest) left the rost of the field ba-hind to assure his team of a pince in



PRESENT YOUR MICROPROCESSOR-BASED PRODUCTS AND SYSTEMS TO THE DECISION-MAKERS



Practical applications of the microprocessor revolution have appeared so quickly that many-neople at management and executive levels are largely unaware of the implications.

For their manufacturing processes and administrative systems, their products, their business.

Which is why the West Yorkshire Metropolitan County Council (in association with Bradford and Leeds Universities and Huddersfield and Leeds Polytechnics) is promoting MIPREX.

MIPREX is a combined 3-duy exhibition and seminar which will be intensively promoted: to industry and commerce own introduction of the

practical applications of microprocessing.

MIPREX presents you with a splendid opportunity to introduce your current products and systems and discuss development potential with the decision-makers,

POST COUPON NOW to Economic Promutions Officer, WYMCC, County Hall, Wakefield WF1 20W

YES	tum Intere	etrel hi tabl	is a straight			
101	11.0	an ti tii iaki	rig sillitti	shace at M	IPKEX	٠.
1 - I TH YEST	કલવી મિલ્લ	Hillion mit	a Stoud H	eservition	Form to	٠.
Name			a a	il.		
Comp		100				
		10 m		-	N 4 (1)	
Adda	NN	1. 1. 1. 1.		136		
Ti si		100 miles (100 miles (y Y.			- 1
福田 岩。				* • .***		· ·
Telepl	in the second					1.5
Heleni	ope.	-1858 P.	A 200	- Ja 341 -		w
24.3700	2.3			مستوار الآواد مستقول حا	100	

WEST YORKSHIRE Spingered by West Yorkshire Mempolitus County Council, Leeds and Memopolitan County Council, Braylord Universities and Leeds and Haddestreid Polynesines and Leeds and Leed

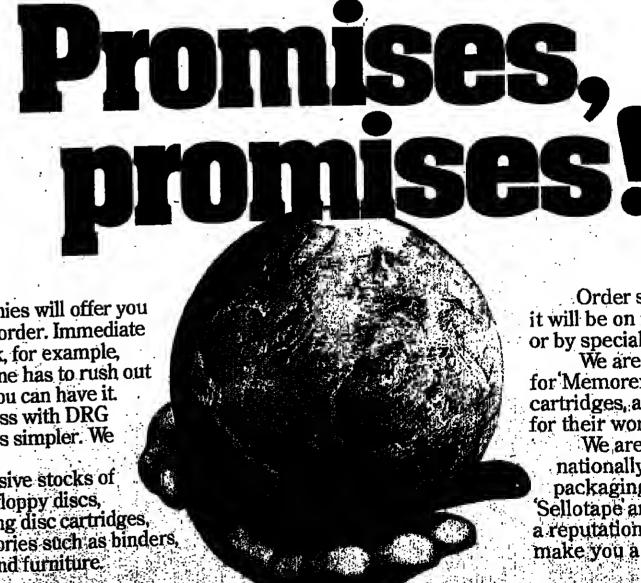




Some companies will offer you the earth to get an order. Immediate delivery from stock, for example, when really someone has to rush out and buy it before you can have it.

Doing business with DRG Systems Supplies is simpler. We mean what we say.

We have massive stocks of computer media-floppy discs, front and top loading disc cartridges, cards-and accessories such as binders, cabinets, racking and furniture.



Order something from us and it will be on its way within 24 hours or by special delivery if you require it.
We are the main UK distributor

for Memorex' diskettes and disc cartridges, and a main distributor for their word processing supplies.

We are part of DRG, internationally famous for paper and packaging, with such stablemates as 'Sellotage and Basildon Bond'. We have a reputation to consider. When we make you a promise, we deliver.

DRG Systems Supplies

Unit 8, Lynx Crescent Winterstoke Road, Weston-super-Mare, Avon BS24 9DW Telephone (0934) 416392.

From selling e DEC mini from the beck of e motor-bike to controlling the Europe-wide merketing operations of e \$1,000 million company from his rerefied syrie in Geneva, Geoff Shingise (left) has, like his company,

Bird's-eye view of European operations

WHEN you sit at the top of the Europe-wide marketing operations of a large company like Digital Equipment Corp. you get a bird's eye view of the whole Continent, and a pattern begins

That is the position occupied hy Geoff Shingles at DEC's European headquarters in Geneva, and he perceives some subtle differences between the unior European minicomputer

"The UK is our biggest market. and the mlx of competitors is pretty much the same as it is in the US; we find that IBM is a wcaker competitor in the UK than in our other markets because it does not dominate the UK market overall to the same exicut as in other countries. 'We started selling commer-

cial systems in the UK first; that was with an office in the City of London, Today we market them throughout the UK, and In France, Germany, Switzerland, Holland, Scandinavia and one or two other countries," he says.

"Gerniany is our number two European market, but our commercial business is not as strong there as in the UK because of the

We will reduce the price of our

popular ZIP ASR by £300 to £1,500

If you offer us e 33 or 390 ASR in

part exchange before the end of

We started selling the 33 ASR in

1966 for eround £375.

Many of these

terminals

and others

supplied

over the

ensuing

service.

years, are still

giving stalwart

However, the time

mey be right for you to

upgrade in speed to 30 characters

per second. The ZIP-30 ASR can be

employed es a direct plug-in

Data

Data Dynamics Group

presence of Indigenous compatitors, particularly Nixdorf and

"France comes third, bul SEMS ia a keen competitor there, and CII-HB olso makes a ilfference. SEMS is particularly atrong in the technical market. and French government influence helps them. Our you can atwave compete with an outstanding product," he amiles.

"Italy was a late developer, but it is coming along fast now. In fact we seem to do particuiarly well in countries with weak

DEC is still of course primarily regarded as a company operating in the scientific and technical marketa, but this image is growing ever wider of

"The acientific side is still growing, but at a slower rate than our overall 40% growth figure," says Shingles.

'In fact, with governments cutting back expenditure oil over Europe over the past two or three years, the scientific. medical ond laboratory business

Part Exchange Your 33 or 390 ASR for a New ZIP ASR

From a zero base in 1970. commercial eystems, which include networks and OEM sales for business applications, now represent 40% of DEC's business. "In Europe, we started in the

commercial market in the UK in 1972, just in the City of London. "Since than it has expanded to cover the whole of the UK, France, Germany, Switzerland, Holland. Scandinavia and one or

two emaller markets. 'We set the same profit goals for all aectors of our businesa, and broadly all areas are comparably profitable.

Most commarcial business is done through OEM systems builders, but we do eell the DECdatasystem line direct to large end-users who want several systems. We are providing better and better tools in the commercial market, and the TRAX software is an example of

At the top of DEC's line are the DECsystem-10 and 20 36-bit mainframes, which represent something under 15% of the company's business worldwide.

We are still making good profits on these machines, and the business is growing of the

replecement for the earlier

machines and can even use the

same stetionery. It can run at 10 or

30 characters per second and can

be supplied with a variety of

either of two codes.

The ZIP-30 ASR is designed end

manufactured in Europe by

Europeens to meet European

options, such as red/black

ASCII.

printing, 132-column

platen, friction or

sprocket feed, end

EBCDIC or

codes.

versions can be

switched to operate on

Baudot

EIA,

Some

Erekine House 58-73 Quoen Street Edinburgh EH2 4Ni Tel: 031-226 6201/

same rate as our business overall, but it is difficult to sell large systems in Europe because of the presence of competitora like iCL, Siemene and CII-Honeywell Oull," says Shingles.

However, the new low-cost DECsyetem-2020 got off to o very good start; It is offered as an OEM product, an unusual marketing move with a mainframe although the IOM 4300 series looks likely to be bought by the same kinds of customers. Even without discounts, Shingles eeee the 2020 as an

attractive machine for bureaux. "The reputation of our 36-bit mechines helped It become a big success from the start, particu-larly in the bureou area," he

Just below the 2020 la the VAX-II/780 32-bit minicom-

"The VAX has taken off pretty well, and the features are proving attractive to systems housea. It is mainly for technicol applications, and is a particu-lerly hot Fortren engine, lining up well agoinst much more cxpensive machines from Control Data.

"There is a good VMS operating system with Fortran in native mode, plus the compotibility mode for ell PDP-11 software; clearly people will buy it for VMS and for its power and speed, but softwere conversion from PDP-11 is not a big pro-

biem," he insists. "A typical VAX costs about £100,000, and there is plenty of room for new modals both up and down. There is a role for both 16 and 32-bit machines, and a low-cost, more simple VAX is In demand from our customers.

"As to software, engineering software is already written, and tha machine represents o dramatic improvement in priceperformance, and is finding favour with iBM and CDC users who are new accounte for us."

According to Shingles, de-livery on the PDP-11/34, which presented major problems 18 months ago, is now down to 90

"We don't think we auffered greatly from the long deliveries we had to quote, but you never really know what you have

Perhaps the biggest event in the minicomputer field over the last three years was the arrival of IBM with Seriee 1. How did that affect DEC?

The Initial reaction to Series was that at last IBM had done what everyone had predicted for years. At first there was a big flurry of activity, and people are now in process of evaluating just what it is.

"Series I is almed directly at the traditional OEM, and over

learn all the things it knows it does not know about that mar-

the metamorphosie in the lifsetyle of both compeny end saccutive in

ises the minicomputer market, and although there was a hiccup when IBM annunced Series I, no dip in our figures was dis-

Geoff Shingles has seen plenty of changes since he came Into the computer business in the 'I was with Eiliott Automa-

tion in 1962-63, and at that time they were thinking of making ler computers auch as the 903. But there was little enthusiasm for amall computers at

"I joined DEC 13 years ago in 1965. At that time it was a £5 million company, and the UK could easily have competed; DEC, Data General, Hewlett-Prickard had yet to get established, and it would have been possible to have grown up with them. But it is hard to believe that the UK could buy a place at the table loday."

Expressing surprise that little menilon had been made in the discussion of microcomputers, end products - the ISI-II line

"I don't believe that the machines are a survival is We could still be around with them. Out they are very imp unt products and the keyle much of our future business ! an area that present-de ninimakers have to deal with he concludes.

George Coggan, head of the diversified Gamma Associate systems and computer group's the UK, often recalls that Ged Shingles sold him his first DEC minicomputer when Cogge wos working at Nottinghan University. The machine army on the back of Geoff Shingle

It is o long way from No tingham and selling off a motor cycle to presiding over the Eurone-wide markating open tions of a \$1,000 million of company in the rarefled air e

But the change in Ged Shingles' lifestyle mirrors to exactly the metamorphosis Digital Equipment, the coputer company which gres by

Special travel arrangements to visit the Compec Europe Exhibition

Ltd., the world'a largost publishers Hotel, Rogier Place * arrival ol computer, alactrical end dopartura transfers * admission to the Exhibition * services electronic journala, hava made pacial arrangaments Europe Exhibition. The coat includas traval by schadulad

Tour A May 6-May 11 1678 (5 nights) at the Sheraton Hotel from £205.00 □

PC Electrical-Elactronic Press

LETTERS TO THE EDITOR

User participation in systems design

is lu management'a inferast.

However, this is not happening

Many system designers are

technically motivated, and do

not see user alms clearly

enough; and secondly, there is

effective user participation in

system design.
NCC is working with

Manchester Business School to

narticipation in systems design discuss the possible loss of lobs arising from word processing. It is probable that the auccessful in practice, for two main exploitation of microelectronics, including word processing, will displace some people from their current jobs, and result in very different tasks for those who use no generally acceptable methodology for organising the new aystems, or alternatively, that the same number of people will be able to

increase thair productivity appreciably.

If efforts are not put into expanding employment in other fields, there could be growing resistance to microelectronics. Consequently, it must be in management's interest to look for ways of creating profitable

provide sultable courses for all partiae to the system design For those who are interested. however, there are two books aiready published that are relevant to thia subject: A participative approach to may be displaced by the new computar systems dasign, by

Research: Is it useful?

THE British Computer Society Specialist Group on Formal Aspects of Computing Science has recently circulated o questionnalie to over 600 chief

The aim of the questionnaire is to ilnd out whether programmera in user installations think research in computing and data processing is useful or not. Further, we would like to know the areas of

We would obviously be interested in the views of your reoders and copies of the questionnaire can be obtoined

D. SIMPSON Chairmen, **OCS-FACS Group**

Department of Computer Studies Sheffield City Pond Street, Shoffield SI IWB.

IBM switching system

YOUR report on the technology used in the two introduction of the IBM 1750 systems is solid stote electronic switching system (CW, March 22) says, "Both systems (le the 3750 and the 1750) use an alogue cross-point switching with reed relays and frequency division multiplexiag". In fact the

crosspoints with space division multiplexing. A. B. CLEAVER

Videofiche takes off

• From front pege

document scanner that should cost no more than £3,000, cheap enough to install at a bank branch. The company believes that Videofiche could easily receive and sort cheque imagea transmitted from remote

The company's first big banking cuatomer, Credit Communal de Balgiqua, is installing a centralised system in sussels with a scannar reading cheques, transfer forms and accounting and ahare

An important feature of the Videofiche scannar la that it employes a charge coupled capture the image of a document, the image being made up of 750 lines each with 1,000 dots. The system avoids digitising white areas by simply recording start and end indicators.

Integral processor-bosed recognition picks computer processible data from the rest of the digitised image.

Sucii dato could be reference numbers for branchas, accounts or serial numbers of documents The images are stored on a 300 Megabyte disc from which they oan be retrieved under the control of a General Automation

16/440 minicomputer by up to 16 deo terminale. The system software splits the screen of each terminal and locetes the document image on one side. The operator can then inspect the image and key in eny data that could not be as a hendwritten ampunt

Data captured by the system at Crédit Communai wiii be validated by the bank's IBM 370 meinframe with which Videofiche will communicate in 3270 mode.

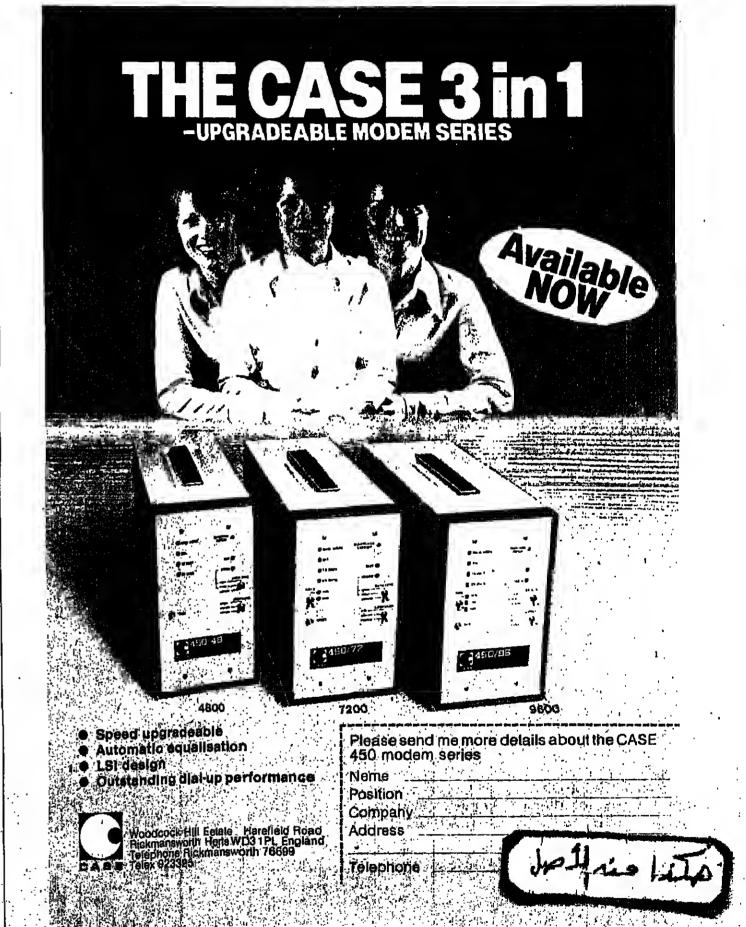


first somples of a 64K bit RAM hipped into Europe have been delivered to ICL by Motorola ond initial teating has been concluded successfully.

Bill Tolbot, ICL's director of technology (centre) is agen here rolding one of the first samples of the device with Motorola's UK marketing manager Mike Alderson (left) and Europeon NMOS operations manager Doug Dunn (right).
Tolbot said that ICL were

'Surprised and delighted" to find that Motorola was the first to ship 64K RAM parts for

There are no plana at present to start production of the memories in the UK.







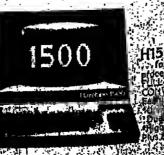
(Nest Right) H1400 . / . for data enquiry and data entry applications. LOW COST HIGHLY RELIABLE

INSWERPHONE FOR AFTER HOURS SERVICE CALLS ARE

061-224 3306



tor numeric data entry applications 1400 ECONOMY 1500 STYLE





Tour & May & May (01975 (2 mg/s)) at the Shereign Hotel from £143000



Qust Piglat for buffered screen
forms ting spolications.
PROTECTED FIELDS LOCA
EDITING

520



A felp le la 43 talpan 2 helpa) Jel Ma Dullin 656822 Teles 3124

Company Address

I am Interested in model(s) 1400 L

Please send lilerature i



Nelson Computer Services Ltd

IBM 029 A22 Print Punch

IBM 059 Varifier

Univac 1710 VIP

EDS 60 D.P. Cabinets

Wilkes MDL Decollator

Wilkes MMB Burster

PFE 1104 Guillotine

Cave and Tab A Frame Decollator

Ring Mike Jacques on Rossendale (07062) 29125

ST. JOHN'S COURT, RAWTENSTALL, LANCS, 884 7PA

COMPUTER?

LINK (UK)

NOW HAVE THE FIRST

MAGNETIC TAPE CLEANER WITH

The eye scene the teps for physical de-

fects, without erasing eny recorded infor-

38A Georgiene Street, London NW1 OFF

mation.

Computer-Link (UK)

Call us on 01-267 5195

CMPURITIES ---

AN EYE

80 COLUMN HAND PUNCH

Ex-stock from £95 + VAT

COMPUTER BROKING) SERVICES LIMITED

DEC PDP 11/05, 11/10, 11/34, 11/35

PROCESSORS AND PERIPHERALS AVAILABLE FOR MMEDIATE DELIVERY FROM STOCK

> Ring Gordon B. Epps on 01-602 45.02 or write for further details

214 BLYTHE ROAD LONDON W14 OHH TELNº 01-602 4502

If you lases, rant or own

I.B.M. HARDWARE You naed

SUN COMPUTER **SERVICES LIMITED**

Discontinuenca Installetion Reconfiguration Transport

Installation Planning Relocation Feature Supply

Of all IBM 360/370 systems

Don't move your IBM equipment before contacting us. Our fast, afficient, economical service ensures minimum downtma and guarantees roturn to ISM maintananca.

TEL, 01-979 9824 TWX: 27975 Toptel G

FOR SALE

BCL MOLECULAR 18 COMPUTER

MK II (6 ME) 24K 2x1600 Disk Drives CDC 400 Printer. CDC VDU Teletype Peper Tape Punch / Reader

Further details and tenders contact:

Devid Pedley, Operations Director Telephone: Sevenceks (0732) 51174

WE BUY CASH

BASED COMPUTER SYSTEMS

FAST DELIVERY

KEEN PRICE

ISM 3333-011 I8M 3330-011 18M 3350-A02 ISM 3350-802 IBM 3420-008

IBM 3803-002

IBM 3168-4MB offer with price and date of delivery to:

Datanverarbeitung Klaus Hubner GmbH Reinsburgstr. 57 D-7090 Stuttgart 1 Tel. 711-618676

01-349 2811

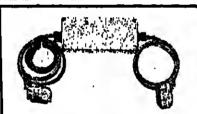
SERVICE SUREAU Providing Betch RJE/TP facil-nies for OS and OOS uses at ITEL ASS-3 3072K

OS/SVS/HASP VM/CMS 01-242 9283 01-836 0355

TWO COMPLETE MICRO COMPUTERS

eech comprising Motorole 6800 CPU 40K bytes mantary (2 Ilmes 16K + Quirtee 4K) 4K byte E Prom (4 times 1K) twin 256K byte floppy drive 12 inch monitor screen keyboerd with humeric cluster to be said with a set of

To view contact Trever Seyes on 01-830 1881. No reasonable offer



or

PERMANENT

We are the Specialists!

ANALYSTS PROGRAMMERS OPERATORS VDU/KEY PUNCHOPS DATA CONTROLLERS

Computer Services Limited

01-487 5781

FACTORY FRESH T.I. 810 PRINTERS

2 WEEKS DELIVER

50 cos 132 col. bi-directional with aprocket feed and forms langth control. Standard RS232 inset, paper width 3" to 15". T.I retail £1450. Our Price £1350 ex. VAT

> ABACUS COMPUTER LIMITED 82 New Cavendish Street, London, W1 01-580 8841

COMPUTER

ICL (1971) Magnetic record heads — C DES C. Actuetors, motors, fens, hemmer-haads, meters, drive spindles,

St. Albans (0727) #116# Bhephard Sound Equipment Ltd. 19 Fexeroft St. Albans AL1 58VV Herts.

The Trade Mark No. 1024336 consisting of the will DATAGRAPHIX and registered in respect of constants puters and apparatus for microfilming the output of puters and apparatus for microfilming the polyining com-computers; apparatus for racording and printing of microficha viawers; and parts and fittings included in Class 9 for all the aforeseid goods; all for sale in England and Scotland" was assigned on 18 October, 1978, by Datagraphic, Inc. of 1895, Hancock Street, San Diego. California, Lighted States puter output data and for producing micro California, United States of America, iq Datagraphis California, United States of America, iq Datagraphis St. Limited, of Naw Lodge, Drift Road, Windsor, Barks, St. 4RQ WITHOUT THE GOODWILL OF THE BUSINESS IN WHICH IT WAS THEN IN USE.

CONTRACT OF PERMANENI

Analysts / Programmers / Oparators
Data Control Clerks always Evailable for U.K. and Overseas

8 MOORFIELDS: LONDON EC2Y 9AA Telephone: 01-638 9319 & 01-606 4975



PHONE 01-261 8293 Wateprinter Haumanner

1900 TIME FOR HIRE

Computer tima is available on a 96K ICL 19D3T, with EDS 6D's, 7- and 9-track Magnetic Tapa Dacks, 2 Card Raadars and 2 Lina

Operating System: GEORGE 2 (enhanced) Communications (702D/7181) or Offlina

Complete shifts available if required Ratas nagotiabla

Contact:

J. W. Ferguson Computer Services Manager MATTHEW HALL GROUP SERVICES LIMITED PO Box 48G 80 Charlotte Street

London, W1A 4SG Talaphone: 01-637 5252

HARDWARE BOUGHT

Any machine, env e qu UN COMPUTER SERVICES Tal. 01-979 9824 Twx: 27975 Toptel G

COMPUTERS **BOUGHT** AND SOLD E O 8 EQUIPMENT LTD.

Tal. 0783-293816 Talax 537763



18M 18M 18M 029, 028, 059 EX-STOCK Fraa warranly

> Various code options svelisbia Tal. 0288-710292

AN ESTABLISHED SOFTWARE/ SYSTEMS COMPANY

in the South-East of England saaks a business relationship with a largar company in order to facilitate expension. It could be of interest to a company wishing to establish its own "Computer Systems Division" or provids an ovarsaas company with a UK basa.

Principals only plaasa.

BOX No. 1019

Distributors / Dealers

We are one of the most important manufacturers of computers in the country which has been the source of most electronic breekthroughs — Japan.

We are going to introduce our small business computer in Europe. And therefore we are looking for qualifed EDP-Distributors / Dealers in the UK market

Applicants should have long experience, a successful record of selling computers on the UK-market end a reliable distribution. and service organisation.

If you are interested in discussing this opportunity please write to: Box No.

FOR USED DP EQUIPMENT

NEW DE LUXE 80 COLUMN HAND PUNCHES (EX-STOCK)

BUY OR SELL THROUGH



CONTRACT

* OPERATORS *

* PROGRAMMERS *

* PUNCH OPERATORS *

LEADING SUPPLIERS OF

CONTRACT OPERATIONS

PERSONNEL THROUGHOUT

EUROPE

SAVE TIME AND

MONEY

CALL US FIRST

LONDON

01-439 755/1

MANCHESTER

061-833 9355/7

TREET

WEBSTER G/P SERVICES LTG. 65 WIDMORE ROAD, BRIGHTEY KENT 881 3AA

E U R

0

Knight is right for contract staff

Knight Computer Services Etd., 14 Old Park Lune, London WTY 4NL.



01-491 4706

DEC DEC STOCK TO CLEAR AT HEAVILY DISCOUNTED

PDP 8A - 400 Series, 2 off, 32K words code memory. Other options evailable as required -£2,000

PDP11/34 and 11/04 Systems and Portpherals for immediate delivery. Also various Refurbished PDP8 and 11 Systems, and Modules from stock.

S.K. SYSTEMS LTD. Stovenege Road, Hitchin, Herts. Telephone (0482) 35287 Telex: 828715 S.K. SYS.

CASHnCARRY **Dumb Terminal** for just £545

why pay more!

Penny & Giles Dala Recorders Limited Mudeford Christohurch Dorset BH23 4AT l'elephone: Highdliffe (042 52) 7 15 11. Telex: 4 1266

TWO COMPLETE MICRO COMPUTERS

Each comptising Motorola B800 GPU 40K Sytes Memory [2 times 16K+2 times 4K), 4K Syte E Prom (4 times 1K) twin 258K Syte floppy dura -12 inch monitor screen keyboard with numeric cluster to be sold with a set of spece boards and a test

To view contact Trevor Boyce on O1-930 (991, No toasonable ulter refused



OHI IRECT DATA MARKETIN LTG. 44 HIGH STREET

BRENTWOOD **ESSEX** Buy, Rent or Lease

BURSTERS/ DECOLLATORS Tel: Brentwood - 229378 (0277) 213273

CARD PUNCHES IBM 029 059 VP/VIP (Incl. Reproductog)

FOR SALE

Date General Eclipse C/330 eveilable July

2 C/330 processors in 2/BAY cabinets, teach with a 192 memory.

Communications chassis. Memory expansion chassis. Bystem console interface. Real-time clock

Contact B. M. Hall, DPM H. P. Sulmer Ltd. Plough Late Heretard Tell (04321/0411

NEXT TIME REMEMBER PARKMANS PRODUCE OUR MULTIPLE AND SINOU

ART RESPONS BUSINESS FORMS ON MULTUR MARTINI
BOSEL MULTIPORM AND LAMILTON COLLATING MACHINES
HIGH QUALITY CONTINUOUS AND CUTS SETS.
PHONE:
BOOGER PADY SLIS RODGER FADYISLD SALES LIAISON OFFICER WITH YOUR HEQUINEMEN IS AL

PARKMAN BUSINESS FORMS PARTIS PARADE, MONMOUTH NGAD LIEK, GWENT: TIL 02118-3434 TELEXALESI



Our Market Place feature (loday on page 14-15) enables you to reach a vast 82,000 circulation of whom no less than 91% personally request their copies. No wonder we attract more display advertising than any other computer journal. 35% of all computer ade appear in our pages—and Markel Place is the most cost-effective of all for leasing, 2nd hand hardware, maintenance services. Wholesale goods, and contract staff. The rates are:

3 37 6 6 6 36 4. 36-98 8 0.0. 67.70 99 s.c.c. and over £6.05 Series discounts: 7-5%, 13-10%, 26-15%, 52-20%.











Peripherals market to decline in 1980s

-SAYS US CONSULTANCY

THE market for computer peripherals in the US will decline in dollar value in the 1980s despite a messive increase in shipments of mini and microcomputer systems. This is one of the mein predictions made in a report* from the US consultancy International Resource Development

'Micros will keep young people in work'

UNION lander Moss Evens tailed the microprocessor chip as a means of kaeping young people all the dole, when he spoke at on election meating with Energy Secretary Tony Benn in support of Coventry S.W. Labour candidate Mrs

Audrey Wise.
Afterwards Evens, general secretary of the Transport and Genaral Workers' Union, told Computer Weekly that If the Tories were alected, they would rely on the private sector for funding further davelapment of

In his experience, this would not heppen, adding that further ors must have some State sup

He believed that the micros were a means of improving the quality of life end urged the next Lobour Government to make

MICRONA

Nuclear Enterprises Microna series of

complete with Dataway access.

The 9081 Microna Processor is designed around Data General's MicroNova⁽¹⁾

programmed for automatic program load.
The Processor is connected to peripheral devices via a front panel serial I/O bus, and communicates with Camac via a 9089
Microna Controller. A series of printed circuit mounted switches allows the 9089 to be used as a Crate Controller in stand-alone

systems, or as an Auxiliary Controller connected to a type L2 or A2 Crate Controller via its rear panel connected Auxiliary Control Bus, in distributed systems.

Furthermore, a whole series of 9089

modules may be interconnected within a Crate via the ACB thus permitting

same Dataway.

The controller is equipped with a 20mA

serial interface in order to connect a system monitor device such as an ASB terminal or visual display unit. In simple configurations, this keeps the initial system cost at a low

■ Powerful NOVA* architecture and instruction set with 16-bit word length and integral hardware multiply/divide.

■ Switched Crate Controller/Auxiliary Controller facility.

Program land from link-selected peripherals

NUCLEAR

ENTERPRISES LIMITED

RG75PB England Tel: 073 521 2121. Cables: Devisotope Readleg, Telex: 848475

■ Integral real time clock and data channel.

■ Serial Iront panel VO bus access.

III Integral terminal device interface

Integral Lam cucode and Interrupt

Milliterate capability.

microprocessor chip. It is configured complete with 16k RAM (9081A) or 32k RAM (9081B), together with a PROM

modules can be combined within a Camac crate to form a NOVA structured computer

Nuclear Enterprises

Micronova*** based

Camac Computer

The report looks at 38 different categories of peripheral equipment, the combined shipments of which had a value of nearly \$7 million in 1978.

There will be price cuta in moat of the categories, according to the report, so that in many cases the expected increase in unit shipments will not compensate for price reductions.

Looking at specific product types, the report predicts that the "akyrocketing" growth of floppy disc drive sales will continue, while reel to reel tape drives will be saved from extinction only by the spread of Winchester technology in disc drives. Some form of removable magnetic storage is needed to load the fixed disc.

Spectacular growth is predicted for sales of printers designed to be used with mini and microcomputer systems and the rapid upsurge in terminals will

But the excess of supply over demand which has persisted in some sectors, like teletypes, over the last three or four years is likely to come to an end es manufacturers like Digital Equipment, Teletype Corp and Onta General bring massive new assembly plants into operation.

The report sees iBM

remaining the largest supplier of peripherals as well as processors, but notes the erosion of IBM'a medium/large market by plug compatible peripheral and processor suppliers like Storage, Technology, Mamorex, Amdahi

It also believes that IBM's prospecta if it enters the microcomputer systems market will be uncertain because of the presence of Tandy in particular, and potentially Texas Instruments.

'Computer Peripherals in the 1980s, \$1,265, 278 pp, international Resource Development Inc, 125 Elm Street, PO Box 1131, New Canaan, Connecticut 06840, USA. Tel: 0101/ 203/966/5615.



Warrants out for two in bank wire transfer

HOT on the heels of Stnnley Rifkin's jail sentence for bank fraud via computer (CW, March 29), arrest warrants have been issued for two employees of another Los Angeles bank who allegedly transferred \$1.1 million from their computer to New York banks in order, like Rifkin, to buy diamonds.

Warren is elleged to have conlacted Kohlnoor in the guisc of an agent for a group of investors who wented to buy diamonds. Kelley was secretary to a scnlor official at the City Bank in Los Angeles, and apparently this gave him the opportunity to find out the secret passwords necessary to effect the wire

Kode XL40 orders

The two men, Michael Kelley

and Richard Warren, have been

eluding the FBI's strentions

It appears they transferred, in

three separate lots, money from

the accounts of a Los Angeles

insurance broker and n hutel to

that of Kohinoor Internutional,

a New York dlamond deuler.

efforts to catch them.

KODE has ennuunced that three orders worth £100,000 have been placed in the UK for the XI/10 data ontry and file monagement system since Kude started selling it here three months ago. The XL40 is built in the US by

School in Heistand, Eosex, traval-led to Shaffield to see a large oal time order processing system in ection. James Nolli, appro priotaly for Sheffield, mekso hand

which is to replace the 1106, in the process of being inetalled in

ow a big commercial system

Memorex on the move

MEMOREX has moved its UK headquarters from Homeslow to Stulnes where the company has fust moved into premises that include 11,000 square feet of office space and two temperature controlled warehouses tutalling 40,000 square feet.

Memorex has also replaced its Coventry and Lelcester offices

ools, end uses its Univoc 1106 to handle stock control, orders, in-voices, and packing notes, by The children sise sow a new £1 1/4 million Univec 1100/80

THESE children, from Romeoy

Nell's computer room. The trip hed been arrenged t supplement closoroom work on camputing with knowledge ni

works in practice.

Our pictura shows Davis Haythorno (right) from Neill's Computer Division with a group

by the non-scientific natural Olympic message

A CONTRACT for nine St Hitl5 and 16.40 adalcompts fittis and 16.40 anacomputer for use in processing futer incomputer incompute procurement agency.

profit target

THE profit target for Post Office Telecommunications is 5%, year for the next three year, it

lower than the target for the three-year period ending Mari 31. The revenue from data to

vices is only 1% of the total la telecommunications, as

although this is growing in ratio is staying the same in line

dalu services revenue wat

million and the total met then

target. Last year's performent

is expected to achieve a sime

JACIJUARD Systems of His

Wycombe has changed its name

to AM Jacquard System by

fullowing the acquisition of h

US parent company, Jacqued Systems of California, by AN

International last December

Jacquard builds the Il ut

J500 systems for data and well

MRI's System 2000 duty

management system has be made available by London to

ted Computing Systems, whi

ioins SIA in offering the per

on a bureau basis in theti

Monnted at the Kansas G

data centre of United Co

puting Systems, the DBM

nevessed by UK users vield

INFORMATION on law mit

in atomic energy is to hear

to the hitherto only tech ;

database of the Internate

Nuclear Information Sys-

INIS. A workshop was he

Paris lust week by the late

ational Atomic Energy ago

input would be processed!

what problems would be ras

and OFCO to determine he

Transatlantic data link.

Atomic law

System 2000

Name change



HEAR leading international authorities from SPERRY UNIVAC, U.K.: TRANSPAC, France. BRITISH POST OFFICE: SOCIETA ITALIANA BRITISH POST OFFICE: SUCIETA ITALIANA
PER L'ESERCIZIO TELEFONICO, Italy:
SWEDISH TELECOMMUNICATIONS ADMINISTRATION: DEUTSCHES BUNDESPOST
TELECOMMUNICATIONS ENGINEERING
CENTER, Fäderal Republic of Germany:
INTERNATIONAL COMPUTERS LTD; U'K IRIA. France: and Program Chairman H. C.
Folis of NATIONAL COMMUNICATIONS:
SYSTEMS: U.S., discuss the organizations
and inferrelationships of the CCITT, ISO and
EGMA data communications standards badies

DetaCommunications, a McGraw-Hill magare Invites you to a two-day Conterence. Jule 61. 1979, at the Brussels Hilton, Brussels, Belgiant

PREPARE yoursall for a new ereol (schools) with the entergence of revolutionary public at networks throughout the world by attended well-organized, no-nonsense, detailed Control

LEARN ABOUT: Ihe physical link elements

specific public data network interface

how individual pieces of data communicate equipment and protocol software religion eech other

· end much, much mora. .

Dora Ball McGraw-Hill Lendon WIX 3RA, England
Place a sand information on the appropriate Dola Communications Standards Contents 34 Dovar Stratt

TIM PALMER LOOKS AT SOME OF THE PRODUCTS AT HANOVER FAIR

The shift to software finds expression at the show

computer industry has been one of rapid evolution rather than revolution, but a revolution is now taking place — the nexorable shift of value out of hardware and into software. Research and development expenditure is a key indicator to the way things are going to go, and every company one talks to today is now spending at least as much on software development as on hardware, and many have tipped the balance firmly

The Hanover Fair, which opened yesterday, Wednesday, and closes on Friday, April 27, has this year consolidated its position as the world'a premier computer exhibition by acknowledging this revolution and setting up a section devoted to software at which 30

companies are due to exhibit. Hanover '73 provided the launchpad for the most successful computer product ever introduced by any of the constituent companies which At that time, ICL Germany

was one of the company's most Iroublesome subsidiarles, chronically unresponsive to all management efforts to make it profitable. Today, following the merger of the local ICL and Singer companies, the situation is transformed, former ICL ustomers are buying ex-Singer products, Singer customers are product line, and ICL is hoping

purpose rather than office unknown in Europe are computar products are the following in their wake, and launchpad for e new model in unganians, who have made a Information is currently to successful entry on to the West hand on only a faw of the German market with their thousands of computer products which are on offer et Hanover display terminals and are keen

The Japanese also exhibit at

this year, but items which are of particular interest Include the new bottom-end Siemena 7.000 series machines - the 7.706, 7.708 and 7.718 - which offer a low-cost entry into Siemens' mainframe line and the BS2000 operating systam. The three small machinea, announced even before the IBM 4300 line will undoubtedly spearhead Siemens moves into countries where It is at present not marketing, and that could include the UK. Also worth tracking down is

the German business systems company David Datentechnik, DDC. Starting off with a Data General Nova-based system with widespread use of ancillary nucroprocessors for peripheral and terminal control, DDC, which opened its doors less than four years ago, has grown iil ii phenomenal rate, and is now processor, using the ubiquitous AMD 2901

The Eastern Europeans traditionally turn out in force at Hanover, with Bulgaria showing discs. Poland showing small computers and printers, and East Germany showing office machines and process control minis, But ahead of the field with to expand their trade in this

Hanover provides an unusual opportunity for students of the world computer industry to make personal contact with

dramatically reduced the cost of

remaining viable in the



The lynchpin of the Mehowt Date Sciences product line these doys to the MDS Series 21, the distributed processing system which combines deta entry and fito inquiry at multiple workstations with local processing in the propriotory Cohol-like "Mobol" longuage. Zilog 260-booed, the Sories 21 locktdes tires medals, the 20, the 40 and the 50; the picture shows a 21/40, which can operate as a stand-alone computer gyatem.

mmimaker, Dietz Computer each year, in general to seek Systeme, remains profitable and agents and evaluate market confident that it can continue so acceptability of their products. onn Electric has been at the for many years to come. The forefront of this move, but other bit-silce microprocessor has

manufacturers of small

computers at present almost

minicomputer business, and Dietz has been making full use

Principal novelties from Dietz are a new model of the basic machine, the Dietz 621, and a floppy-disc terminal system for decentralising applications around a host 621 machine. The new model is called the

621 Compact, which is a disc-backed interactive computer system offering, according to Dietz, especially attractive price-performance characteristica. Ansi 74 Cobol is now on offer with the 621 line, and the company is also demonstrating attachment to an X25 network using the Dixos

The new terminal system is the Dictz 600/20 which is finppy-disc backed and can be used as an interactive terminal tu other Dietz systems. Dietz is also moving strongly

nto the Computer-Aided Design field via lts Technovisian subsidiary, and Is demonstrating its enpublity in this lield at the

New from Centronies is an undefined by nine matrix printer, the 753, which the company believes produces fully acceptable word-processing applications, it features a 130-150 chps print speed, proportional or standard spacing and line justification. The company is also offering the new 704 communications printer which has an integral V24 interlace.

Intelligent printing terminal based on its Facit 4540 mntrlx printer. Called the 4540 T, it is designed for interactive applications, and the keyboard eatures a 20 character alphunumeric display. The Dataroyal lobel printer also

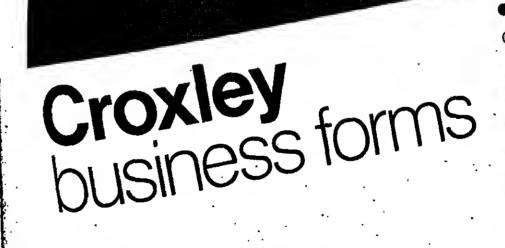
appears, as the 4530. As well as the usual array of V77 minis and BC/7 small bualness systems, Univac is giving a first airing to its new supplied by Bunker-Ramo and called by Univac the UFTS 480.

New interoprocessor-based modems and the EMI 8800 intelligent tape transport make o first appearance on the EMI rechnology stand, and the company is also giving the PIX Remote Computing Facility. designed to take the pain out n setting up a network around an iBM mainframe, lts fi**r**st Germar

The full line-up of Data Recording Equipment products goes on show, including disc drives, floppy drives, matrix printers and VDUs.

Hot from Kienzle Is the new low-rost VRC, Called the 1900, it is upgradable to models in Kienzle's successful 2000/2200 line, 7,000 of which have heer installed world-wide.

Switzerland, is showing its journal tape reader, which is designed for reacting journal rol tupes and can handle OCR-A DCE-B, IBM 1428 and NCR-NO1



The names say it all. The range does it all.

Many of Britain's biggest data systems depend on Croxley business forms and Holdfast labels. They have for years. When precision is paramount (no ifs or buts) - that's when experience counts. When service is vital, that's when the John Dickinson production capacity and distribution network comes up trumps.

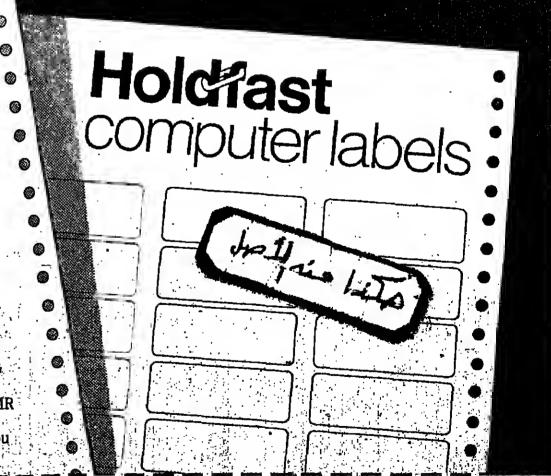
Listing paper, multi-part input and turn-round documents, OMR and OCR forms, continuous envelopes, computer labels (plus the business systems to store the output) - for all of these and more you can rely on John Dickinson Stationery, the experts, part of a major group with unmatched resources. To John Dickin

For samples, details or an informative discussion with a specialist representative, fill in the coupon

John Dickinson Stationery

APSLEY HEMEL HEMPSTRAD HERTS HP3 985 Telephone Hemel Hempstead (0442) 42124 Telex 82452

(RO 'A member of the Dickinson Robinson Group



To John Dickinson Stat	tionery	Apsle	y, Hen	n e l Her	npstead	Herts	HP3 9SS
	Narrie⊥,	1.2.4		4 4 195			
Defails of Holdiast combilter	Position Compan			4			
Details of Croxley business	Address	44 14 1				1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
Place skyour representative					1) 200 (V) 20 (V) 20 (V) 30 (V) 20 (V) 4	tel	
in seek interpointment			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				CW18:4/78

Users and makers back multifunction terminals

Edward Gistaro, scnlor vicepresident of marketing for

you want to do more processing at the remote site, add more ducts. Likewiae, suppliers of opplications and communicate data entry terminala started inwith more people," he explains.
This view of the teleproces-

sing helps to explain the current Interest in distributed processing and networks. It also accounts for the emergence of a new and powerful data processing tool — the multifunction

might go like thie: a company vith centralised data entry decicles to decentraliee, putting its key entry terminals close to the source of the data for extra timeliness and Input accuracy. Here, the thinking is that the

terminal operators will be more familing with the data entered and will thus be able to spot input errors and correct them. The next step is to economise on data entry and remote batch

functions on the same terminal Usually, the terminal will include a processor and, before long, limited local processing capability is added. Finally, the full potential of the terminal is used by first providing inquiry into host databoses, and later by

activity by consolidating both

adding inquiry and management In its full-blown maturity the multifunction terminal provides ntelligent data entry, remote job entry, online and offlina file inquiry and management, and stand-alone processing - plus the appropriate communica-

As with distributed proceshas been the intelligent terminal

ra's box, in the opinion of wagon with a variety of

Traditional remote batch terminal vendors such as Data 100. "Once you start, you find that for instance, began by adding data entry capability to its procorporating remote batch func-

Both groups have since built up the online inquiry and etandalone processing features of the terminals.

Meanwhile, minicomputer suppliers are attempting to get into the act by building on their Users are migrating to multi-function terminals in o variety of knowhow and developing the ways, but a typical scenario appropriate terminal and soft-

Mainframe manufocturers have also been active in producing intelligent terminals, and In unveiling network nrchitectures that make it easier for usere to distribute functions among many or all terminals in the network.

Each approach haa its strengths and weaknesses, based on the experience and origins of the vendors.

For instance, data entry vendors are typically strong on understanding user needs and talloring the terminal system to those needs, but tend to be weaker in communications and stand-alone processing features.

Suppliers of minis and remote batch terminals, on the other hand, are usually strong in communications processing, but relatively inexperienced in dealing with end user needs.

More recently, another user alternative to achieving multifunction capability has arisen in the form of value-addad net-

One of the features of AT&T's planned Advanced Communications Service, for Instance, is the sing, the standard bearer for facility for terminals with these multifunction davices vorious protocols, speeds and codes to cohabit on a aingla sya-

data entry, RJE and inquiry/
response to handle their specific applications needs.

Last October, as if in response to the threat from ACS and intelligent terminels, IHM made its blockbuster announcement of the \$100 Information system — a competitively priced product that incorporates extensive natworking capabilities, advanced rate and unbundled software.

for Integrated Information systems - systems that include the automated office as well as

traditional DP ectivities. He thought the fact that IBM called the 8100 an "Information system" certainly suggested that it shared this view of the future of distributed processing.

Along with Its 8100 announcement, IBM also unveiled its memory technology and elabo- 3730 distributed office communications system, which in-

Bv Morris Edwards

Users are migrating to multifunction terminels. writes MORRIS EDWARDS. Opening what has been called a Pandora's Box, he surveys the growing number of suppliers of equipment this flaid of teleprocessing.



Expected to find widespread use as nodes in either 303X or 370 host-based networks, the 8100 system can also operate as a stand-alone device nr in confunction with other 8100 systema in a point-to-point nat-

Accordingly, it provides backup should the host become Inoperable; and, through direct communications with another 8100, it can bypess the host in performing selected processing functions, thereby reducing ovarhead and freeling the host capacity for other uses.

Robert Fertig, technical direc-Over the past couple of years, though, other suppliers have customise such "communica- niques believes that dietributed data processing department.

cludes a text display station for keyboard entry and retrieval and a high-quality printer.

Supported by new models of IBM's 3791 communications controller, the 3730 is designed to tle into a host 370 for applico-tions such as electronic document fillng; retrieval and distribution, running concurrantly with data processing opplico-

Since the 3730 will be marketed by its data processing division rather than the office products division, IBM is seemingly convinced that the thrust for office automotion will come from nn organisatiun's

Turn to page 23

around the 3701 controller adds processing efforts into mile functional work stations is credence to Fertig's helief that luwing the introduction in its IBM's distributed processing ternilnals will be the uncleus of a multifunction transaction nruund which the automated processing package called sinn to go with Its top of the office will be bullt. System IV/90.

Included in the Vision pag.

age is source data entry of

inquiry and retrieval, local in

management, report and &

ment generation and but

More recently, the fire le

unnounced its Multifued

Executive, which permits us

alone Cobol Processing is

word processing to be additi

For word processing the

ForeWord package canber's from any display stations

tronscribe dictation, mich

report or write and adit direct

from the keyboard. FareWat

can also trensmit and mis-

texts through communicates

Raytheon Data System to

users with its distributed pr

cossing systems, since by

vides compatibility with Evi line disciplines and offerware

broader choice of option to

The industry leader liself.

For example, besides sup-ting bisyne and SDLC, the in

under the X25 protocol with

domestic and foreign pur

IBM has yet to introduce his

system are bisync protocol

stream moderns.

X25 standard.

To do this, it replaces to

with other computers.

the Vision cepabilities.

communications capability

· How are the trulitional intelligent terminol suppliers responding to the challenge from hese varied competitors? Seemlingly by continuing to stress the multifunctional capabilities of their systems and, tucreasingly, by enhauring Their networking capabilities.

Datapoint, for instance, has developed a networking tool called DS3Net which permits a central Dotapoint prucessor to use remote terminal files with all the facilities, occess methods and progromming cose thut would be available if the files

were local. Also, the feature can be used in reverse when the remote installation regulres central office data to accomplish its proces-

Sycor is olso emphasising multifunction copability and networking with its latest pro-duct offerings. Last May, the firm announced a new multifunction operating system that significantly enhances the performance of its top-of-the-line 445 diatributed data entry and processing systems. Called Omnitosk, the operating system provides users with 256K hytes main memory in the 445 to perform applications.

In the networking arena, the firm's major offering is Sycorlink, a resource-sharing feature that permits linking of multiple processors and the shoring of all disc files and peripherals in the

Sycorlink is an option which can be added us o field opgrade to nny Sycor 445 or 405 system. It allows users to transfer requests for files and access to peripherula from one system to unother - transpurent to the onerator and the applications

Sycorlink networks enn also comminienty with each other or with a large centralised comnuter system in either usynehrunuus, blaynehronous

Four-Phose Systems has been

Multifunction terminals win support

From page 22

cessor with a package ealled DMEP-II, and loads Raypac software into local PTS-100 ter-

The PTS-100 is an Intelligent terminal systam that complaments the PTS/1200 line and is reportedly one of the world's most popular intalligent ter-plasis, with over 50,000 units

For networking applications, a downline terminal control feature permits any PTS/1200 sysum to monitor and control, inependent of end transparent to t host mainframe, either a network of PTS-100 tarminals or other PTS/1200 systems under IBM 3270 protocols.

Such a capability makes datahase and resource charing more Lexitron, or both.

flexible and more cost-effective in lnrga data networks, the company claims.

Also, a teletype concentrator allows users with large teleprinter networks to consolidate massage traffic on the same lines used to support PTS/1200 communications, Capitalising on its acquisition of Lexi-tron, Raythaon is also planning to integrate word and data processing into its multifunction terminal systam in a similar manner to Four-Phase and IBM.

Raytheon is testing tha attechment of Lexitron's Videotypa word proceasing units to the PTS/1200 system as peripharals that share lerge,

However, the firm has not yas ecided whethar tha system will be markated by Raytheon,

FINANCIAL NEWS ROUND-UP

UK operation sets pace for IBM global business

companies to report its results, the UK subsidiary has just revealed that for 1978, turnover stormed ahead 31% to £759 million, and net profit 22% to £78 million. The improvements ware dramatically better than the company's business worldwide. where net profit rose 14.5% to \$3,111 million on turnover up

GEC 'bid' move

WEIGHING machine specialist Averys of Birmingham is still waiting for a positive bid from GEC, first mooted in December, when the alectrical gient suggested it might offer 225 pence a share, and Averys rejocted the offer. The possible acquialtion is currently under scrutiny by the Monopoliea Commission, and an indication that GEC Intends to co-operate with the investigation is seen in the City as avidance that GEC is in-

16% at \$21,076 million (CW, Jenuary 18). The UK thus contributes about 6.3% of worldwide turnover and 5% of net profit.

Exports of goods and services to other IBM companies also improved strongly, up 27% at £334 million. Shipments of the lerge-acale 3033 mainframe from Havant will heve mnde a significant contribution to this.

assete during tha year amounted grew 1,100 to just under 15,000.

both Havant ond Greanock was expanded, and construction continued on the aecond phase of the Warwick regional mar-

PO price freeze

FURTHER relief for hard-pressed telecommunications users has been announced by the Post Office, which has guaranteed to freaze prices for a further nine months to tha end of 1979. The corporation is also planning to raisa \$250 million in tha US, the reason for borrowing abrood being that Interest rates are significantly lower in Now York thon in London. The loan will be used to pay off UK govarnment loans, thereby snving ot least **US** firms

AVX CORP, a US producer of multi-layer ceromic capacitors. had salea of \$63.7 million, earning a net profit of \$4.5 mil-ilon, against sales and profits for 1977 of \$44 million and \$2.8 million reapectively. The company expects salas and profits to increase at annual rate of moro than 30%.

Manufacturing capacity et SILICONIX, a US semiconductor company, increased Its European sales from \$12 million in 1977 to nearly \$20 million in 1978. The aggregato 1978 sales were \$43.2 million, earning a net profit of \$3.3 million. The company is planning a major capital expanditure programme in Europe during 1979.

> TERADYNE, a US manufacturer of outomotic test equipment. recorded salas uf \$91.7 inillion with profits of \$12.4 million for 1978. Sales for 1977 wero \$67.8 million enrning profits of \$10.3



TECHNICAL EDUCATION INTEGRATED COMPUTER SYSTEMS 1979 SUMMER SCHEDULE

COURSE 160 - 4 DAYS **MICROPROCESSOR APPLICATIONS** DEVELOPMENT

LONDON 25-28 JUNE



Hands On interlacing

COURSE 240 - 3 DAYS COMPUTING **SYSTEMS**

LONDON 23-25 MAY



nputer Systems Software

How to salect a System: The equipment selection Sequ Softwere Availability/Parforn

Component Competibility · Future Trends to HW/SW

For Free Brochures 70K(O1) 283 3974

ICSP - UK Ltd 15 Bevis Marks, London EC3A 7 LH Telephone: (01) 283 3974 Teles: 895 1068

What's your line?

COMMERCIALBUREAUX

MANUFACTURERS OF TERMINALS and their spiral with an avoid the capital commitments that offering their own rental services

LARGE COMPANIES with a potential lefe ORGANISATIONS such as esfucational estab

MINI COMPUTER USERS

USERS OF WORD PROCESSING SYSTEMS WE NOT wish to make a capital commitment in a systems area that by spilling the

If you can identify with any of the above you should be speaking to our specialists who are qualified to advestig to your needs study and recommend according to your needs

3S Rentals personnal have coasiderable in-depth experience in indicate of fillypes of terminal based systems as well as micro combined and of office five allow rental facilities on a wait range of equipminal from leads including Dala Dynamics. Toxast Digital, Transdate, Dielac, Official, Textronix, Loar Stegler, Midlectron, New Parish For more information contact Mike Brooks, Telephone Bytes

Specialists in the renting of reminal MBS Rentals, Aktivitish House, Madeara Rosel, Vest Africa Same / MBS Rentals, Aktivitish Bibe benal dayon is MBS Rentals.

How to close the 'Software Gap' TIME SHARING BUREAUX who do not wish to take finaschi and technical responsibility for terminals acquired by clients.

Many businessmen have been disappointed y the information they receive for strategic decision-making. It is often too little, too late and

Filling the gap between the ever-changing needs of the user and what computer systems provide is really the key problem—a problem we at Cincom have done something about.

Cincom's family of information systems. software closes the gap.

First, give the end-user access.

Cincom's new T-ASK is an on-line interactive query facility for end users. Ad hoc and repetitive questions that once required special programming

T-ASK is a "user-friendly" system. With easy to use commands, the user gains access to the data he needs through his own terminal.

He has the data he needs, when he needs it and without additional drain on the data processing

A "user-friendly" system demands the most advanced DBMS. Direct end-user interaction creates increased

demands on the data base. As a result, Cincom has developed TOTAL 8.0. You've heard of TOTAL. Well, TOTAL 8.0

TOTAL 8.0 provides superior performance; It is fully multi-task, multi-thread, offers VSAM support, reduced CPU usage, and many other new facilities.

Where products and services come together.
In addition to T-ASK and TOTAL 8.0.
Cincom Systems offers a full-range of data base and data communications products that help close.

the software gap.
We also feature specialised application systems software and Custom Systems

These products and services are backed-up by a complete network of technical I'd like to close my "Software Qap." Please send me more Telephone Egulpment ... Operating System Cincom Systems Int. S.A. Dopt. CY St. Ives Hollies Muldenhead Cincom Systems

product support, system engineering and reducational facilities.

You don't need to live with the

"Software Gap," just call on Cincom to close it.

The Total Information Systems People

Dekklige ST & TOS, England. Circum Systems Int. EA. 1916 (New York) Partie, Stockholm Delgium, Office also in: Basel, Copenhagen, Otherseld Germany, Oslo, Partie, Stockholm

column centimetre SERIES DISCOUNT

Assistant Classified

01-261-8028

MANCHEETER GLASGOW Owen Kelly 08 (-872-42)

COMPUTER WEEKLY -- Highest requested circulation at a tost per thousand 25% lower than the nearest compensor



CONTRACT	OS JCL WRITER Some knowledge of French essential. Prestigious position — Oon't miss this opportunity. Call us now.					
Contract	ICL 1900 GII & GIII OPS. LONDON/SUSSEX Immediate start. Long and short term contracts. Call now.					
Cartifor	ICL 2903/4 EXEC 1 & 2 Veriable contracts aveilable — Oxford, Sucks, Sussex. Selery: Up to £145 per week.					
Carterati	EXPERIENCED KEYBOARD OPS. Fantastic opportunity Top Level contract. Excellent Relea — Min. 2 yrs. experience required. Call Sue or June now.					

Responsible position. Veried duties all June or Sue for details. PPORTUNITIES IN EUROPE

MIDDLESEX

URROUGHS 1715 OP

WHY KNIGHT IS RIGHT FOR TOP OPS.

- Knight is part of BOC's Computer Sarvicas Division larga, stable and international.
- * Wa raspond at once to requests for steff from companies throughout the UK and Europa.
- Wa'ra highly exparianced with over 6,000 contracts complated auccassfully for more than 1,000 top Europaan companies.
- Project work includes JCL writing and documentation for major hardware or software convarsions, and wa fraquantly managa complets projects - supply data entry and programming staff as wall as oparators.

	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
Contract	IBM SYS 3 & 32 OPS £130 por week. Day shift. For further dutails call us now.
Common	YOUR FIRST CONTRACT Top ope rely on Keight for advice end development. As well as the best joits. Ring Sue or June now
Contract	UNIVAC 80/30 — OS OPERATOR Required urgently. Two month contract. Ony shitt, 9-5.30.
Contract	HONEYWELL OS 2000 OPS. WANYED NOW Immediato start Essox aron. £130 per wook. For further information just ring.
Contract	ISM OS JCL WRITER SURREY £1 55 per wook, inmodiato etart. Ono year contract.
Contract	OATA CONTROLLERS With Gill experience. Long-turm contracts. £125 per wards -t horius, split day shift. For further flottills ring Sue or June.

Permittent Career Opportunities for Operators

This friendly firm of commodity brokers based near St. Peul's URGENTLY require a young Operator to work a thres-shift system. Career prospects are good for someone with min. 12 months' 2903/4 or George II 1900 exp. and altorts can be aly rewarded with a bonus besad on how the Company

Calt Sally or Elaine.

IBM Sys. 3/15 LONDON, N19

A company in North London are currently seeking three Senior Ops. with min. 1 year tSM Sys. 3/15, prelarebly with telecomms exp. They work a 3-shift system and have recently converted from NCR. Benefits incl. min. 4 wks. hole., 12½% hol. bonus, productivity bonus, S/T losn and contrib. p/s.

Salary: £3800-£4750 % 20% S/A. Call Eleine or Sally.

ISM 370/138 08/VSI JCL Utilities

Our client is currently looking for an Operator with two years' OS/VSI exp., prsf. with JCL. They have a three-shift system and parks incl. 20 days' hols., LVs and a luncheon allowence of £80 p.e., p/s et 21 and e alcknass benefit schame.

Balary: £5000, incl S/A. Cell Sally or Eleine.

ICL 2980 DME

A company based in the City are looking for an Operator with 1-2 yrs. exp., although ICt. 1900 exp. will definitely be considered. The candidate chosen for the position will only have to work 1 shift + 0/T if necessary and other parks incl. 4 weeks hols., free kinch in co's own restaurant and a new suit every year!

Salary: £3800 + 10% bonus. Review in July. Call Elsine or Sally.

A company situeted in the City are currently seeking an Assistic Ops. Mgr. The ideal cendidate would be able to take responsible for the date control and operations depts, and would have 2.3 pt. IBM Sys. 3 exp., some of which exp. would have been as an Opt. Supervisor or Shift Ldr. RPG-II exp. would be an advantage. Hours 9 a.m. Exp. or exhausts a processory. Hours 9 s.m.-6 p.m., elthough some U/I Salary: £5500-£6000. Cell Selly or Elsine.

1CL 2904

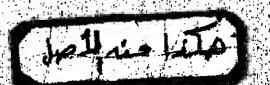
A company in Surrey ere URGENTLY seeking a Senior Operator to work just 1 shift, 8.30 a.m. 4.30 p.m. + 0.71. The ideal, candidate would have 2-3 yrs. exp. t 900 or 2900 exp. sind sho have a knowledge of JCL. There is a los a possibility of programming processing into programming. Perke incl. 3 wks. hols., subs. lunches and press.

Salary: £8700 + O/T. Call Eleins or Sally.





London 01-935 06713 Manueville Place, Wignore Street, London WIM 5LB Birmingham 021-236 2781 36-37 Great Cherles Street, Queensway, Birmingham B3 3.1Y. Manufesta: 061-833 0427 Blackfriers House. The Parsonege, Manchester M3 2.1A





SALES AREA - U.K. ALLEGA E E PROPRIAT

雪原。"沙隐的 SALES AREA - U.K. QUOTA EARNINGS £11,000 + CAR

Join a major Sarvica Sureaux that not only sells Timesharing, services and business packages of all types, but also sells DEC oriented drotributed processing systems, being a leader in its field it can other excellent prospects plus top parks of thos 6UPA and 24-hour medical coverage. Vecancies exist in LONDON, MIOLANOS, MANCHESTER and LEEOS. You should be a successful selesman with Suriness Systems experience and aged between 25 and 35. Basic seleny is between £4,500 and £7,500. Please apply now. CW18/1. meter Sarvice Sureaux that not only sell

> 加度的四個工具通過管 All the state of the state of

LONDON & MANCHESTER c £8,500 + COMMISSION

requires two district monagets to take there of a numbet of selections and be respensible to a lette selection. Previous selling experience is obviously assential, with added

多种原源部

QUOTA EARNINGS £16,000 + CAR

Join a company really going places whose over hall their seleamen earned £16,000 lost year. Their products are amongst the most advanced interactive OP systems in the world, having a nine-fold increase in performance ecross their range of CPUs. They size offer a very efficient range of compilors and operating systems. Vacancios exist in CENTRAL AND WEST LONDON, SERKSHIRE, MANCHESTER AND GLASGOW, with basic salaries between £6,500 and £8,000, CW16/3.

CITY, MIDLANDS AND NORTH PACKAGE: £16,000 + CAR

This successful Enrepsen mini-computer menulecturor wishes to recruit four first-reto salesmen to soil to the top 1,000 componies where their products have elready made them would leaders floats obliny will be 65,000 with guarantees of around £3,000. There is a gonumo chence for premetion and this is a leafly good doaf for the light salesmen in the product business systems at small machine experience. CW16/4

子具集都の1000円 (ASI) (and ASI)

NORTH OF ENGLAND QUOTE EARNINGS £14,000 + CAR

this company manufactures is in the middle to upper range, and is thus very pusy to sell, You will know this equipment and will be proud to work for such a successful firm, so if you are ALSO successful, please apply now CW16/5 2015年1月2日 公科目中認及公園 SALES AREA - S.E. ENGLAND QUOTA EARNINGS TO £12,000 + CAR

It's easy to soil this company's plettors, as the software supplied is first rate, succinct and based on a powerful 1 this microprocessor. The company offers its auccessful applicants excellent tearing ladfines and enco its inception over 20 years ago the company con boost a racord of schievement. CW16/8.

·福德門 新跨越地區[阿拉] SAFFEREN

SELAS AREA - U.K. QUOTA EARNINGS £13,000 + CAR

Virtually since it ateited, this company has increasor its agen by 40% per annum. Join one of the min compuser world leaders and apply for openings in N E. London, the CITY, firstel and Marchester areas. The total package includes a £6,000 basic and a non-recoverable guarantee. Along with eavighting alse, because of their outstanding surcoss, promotional prespects are a reality. CW 18 / 7.

> 等時 問題數計 無關語 法海绵 " All the state of the state of

SALES AREA - SURREY & HANTS BASIC £5,500 + CAR + COMMISSION

This professional company ungently now [a Poyro]: Services Salesinan who can work from home. The applicant must have business systems exponence and be propried to work hard. As this campany is a subsidiary of a Bank, the parks dialigo will the job eralexcellent. CW 1670.

ing Major Britan (1911-1917). The control of the Land Major with All growth of the Control of th

- 化分类异子类原数组织 (4.5 4 6 5 1 4 5 1 5 2 6 1 4 1 6 5 1 5 1 6 5 1

SALESSANS.

LONDON TERRITORIES QUOTA EARNINGS £12,000 + CAR Top grade successful saleamen are required by this lamous business systems monutacture. Although their equipment is disc based, your provious experience could have bean ledger card or furneux selling. With seles branches all ever the U.K. their seles have really taken off, and the future looks

TERMINEL SALESWER

LONDON BASED. £4,400 + BASIC

Have you got what it takes to bola gotesman? Fine proviously maintened company has positions for young people between 23 and 30 wite freve the right husiness experience if you faith you full please ring. Analysta especially welcome CW16 / 10.

学的知识特别 医含氯化物银光环

LIVERPOOL 1st YEAR QUOTA EARNINGS £5,100 + CAR

An international Maintragio manufacturez requires a transce salesman for the fiverpool and. The applicant should have a degree for equivalent) with 2 years, expansion in this retail industry and a pretend ago range between 23 and 30 years off. Full haming on all aspects of this existing work will be given. CW16711:

Recruitment Consultants.

01995 3883 (01958 6138 Evenings) Data Express House, 3 Prospect Place, Heathfield Terrace, Chiswick W.4

ARE YOU SUCCESSFUL AT SELLING SMALL BUSINESS SYSTEMS?

If so, consolidate your experience with a move into Mini-Computers

INCOME PACKAGE £14,000-£17,000

We are recruiting for the Mini Computer Division of an International Manufacturer who in the first year of operation has experienced considerable success and market penetration into the commercial sector. They are offering successful Sales Executives the opportunity to join this expanding division where training, products, software and excellent technical support will ensure your own personal success and give you greater job satisfaction.

Rapid growth is ensuring well-above-average prospects for the future and all of the benefits associated with a major organisation can be

expected. These positions represent excellent opportunities for successful applicants to become part of our client's exclting future plans. If the prospect of joining a young, professional, results orientated sales force, where rewards include a five figure income appeal to you and you are conveniently located for a post in London, Birmingham, Manchester and Leeds, contact for a confidential discussion:

RICHARD CHAMPION ON: 021-236 3781 (24-hr. answering service) OR Hagley 4166 (evenings and weekends).

Specialist Computer Recruitment Ltd.

ANALYST/PROGRAMMER TO £8,000

PROJECT LEAGERS To £7,500

DEVELOPMENT PROGRAMMERS

To £7.500

SYSTEMS ENGIN**E**ERS £4.800-£7.500

Applicants reust be graduates with at least two years' as pertance using Assembler. CORAL or ALGCL: You will be involved in Real Timo

BASIC PROGRAMMERS To £7,000

Three years' enalysis a speriance is sought by corepany eating database techniques to work on commercial and financial applications. N

£4,000-£7,500

SENIOR ANALYSTS

To £6,500

COBOL PROGRAMMERS To £6.000 18 months' COBOL expenence, preferably geined on ICL 2800V 1800 a required by well-known company for their limences applications. In-line and PLAN a distinct advantage. ANALYST/PROGRAMMER (to required 18,500, CITY

ANALYST/PROGRAMMERS c. £8,000

RPG PROGRAMMER

£5,000 +

SYSTEMS ANALYSTS

Plane telephone for an application form if Interested in one of

AMES **PERSONNEL**

ICL 2970 **PROGRAMMER** (SYSTEMS SOFTWARE)

£4635-£4962 P.A.

A 3m byte has recently been installed at the Authority's new camputer central in central Bradford. It serves a large and growing cammunications network providing services to Head. Office and eight Divisions of the Authority, via remote batch, batch, MAC and TP lacilities.

Whilst at least two years' programming experience is required this need not necessarily be in systems software as canaderation will be given to applications at programmers wishing to mave into this iteld.

Relocation and disturbance attowances are payable in approve

Application farms may be obtained from the Ragional Persoenel Officer, Yorkshire Water Authority, West Siding House, 67 Abion Street, Loads LSt 5AA. Tal: Loads 4620t ext. 258, to whom they should be returned not later than 30th April 1978 quoting ref. RN 672.

Yorkshire LAM =Water== V V

UNIVERSITY OF SURREY **COMPUTING UNIT**

SYSTEMS PROGRAMMER

The University ere instelling e tergo multi-eccese system during the summer end epplications are invited for the post of Systems Progremmer within the Computing Unit.

The successful cendidete will be expected to work on the development of softwere for the new system. The eelary will be on the scale £3883-£6555.

Further perticulars can be obtained from the Staff. Officer, University of Surrey, GUILDFORD, Surrey GU2 5XH. Telephone GUILDFORD 71281, extension 452 Applications in the form of a curriculum vitae, sogether with names and addresses of two raterees; should reach the Staff Officer by Wednaeday, May 9

RECRUITMENT **CONSULTANTS** +000,83

Targe Computer Services ie the specielist Computer division of Targe Recruitment Ltd., hendling positions in the computer industry for all levels of

We ere currently looking for people to take over existing cliente end to seek out new business in

This will involve wording of en edvertisement, edvising cliente on edvertising, presentetion, end ertwork, and then co-ordineting the response. interviewing epplicents end presenting e curriculum vitee of each person. Thees ere forwerded to the client for discussion on which epplicents they wish to

We require eomeone who hes e beckground in systems enelysis, programming or operations, hee a strong personelity, is self motiveted and has a fleir for

Compeny bonefits include e good besic selery, en incentive commission scheme end PPP. If you ere interested end require further deteils pleese contect Jeckie Powell on 01-439 1855.

TARGA COMPUTER SERVICES

01-439 1856

MINI-COMPUTER PRODUCT MANAGER

Sperry Univac requires a Product Manager to support its Mini-Computer Marketing Operations. The epolicant will have at least 5 years experience in the DP Industry, typically with a mini-computer marketing organisation, in a sales or sales support analyst function. This role offers the opportunity to really develop a career in marketing by getting involved with senior management in the development of marketing policy end through the support of the

This is an importent and challenging position and the renumeration reflects its requirements and responsibilities.

For further information telephone Peter Lines on



01-965 0511, or write to Heather Green for an applica-tion form: Sperry Univae UK Headquarters, Sperry Univac Centre, London NW10 8LS.

ESIDELISH TO LONDING

CONTRACT OR PERMANENT

DEC

BASIC+ RSTS/E MACRO 11 — RSX11M

HP3000

COBOL IMAGE

IMMEDIATE STARTS TO £350/WEEK OR £9,500/P.A.

> CONTACT: JIM FORT 01-353 7141

Minicomputer Specialist

If you are a Minicomputer Specialist you'd probably enjoy tha challenge uf:-

- * Advising project teams on the presund coast of decentralisation.
- * Idantifying and evaluating othernative hurdware/software .
- * Supporting/advising project feants during system davalopment and implementation.
- * Working with a variety of different types of equipment. * Kaaping up with developments in minicomputer technology.

Wa are luoking for D.P. Consultants with an extensive broad based tachnical duto processing background which includes axperiance of both minicomputers and IBM operating system

Salary is around £7,000, but could be more depending on axpariance and an excellent benefits package includes four weeks holiday, rising to five, and relocation expenses. There will be opportunitias for travel throughout Eurnno.

So, for a job with more challenge and real prospects, contact lack Kannally at Rank Xarox Limited, Phoanix House, High Streat, Bushay, Herts. Tal: 01-950 4030.

RANK XEROX

Systems & **Programming Consultants**

Do you desire . . .?

- to be based in a country environment to work on a variety of assignments
- to join our in-house mini applications team a realistic salary and bonus the prospect of a company car

member of BUPA

Wa can offer you all of these.

Wa are a rapidly axpanding computar consultancy and software housa basad in rural Essex.

Wa currently require Analyst / Progremmors or Progremmars with at lassf 3 years' D.P. axperience in a commercial onvironment.

If you like the sound of whet we have to offer, find out more from Karen Burden on 024541-4255. Or write to Anglian DP Sorvices Ltd., Stratford House, Maldon Road, Danbury, Chalmsford CM3 4QW.

ANGLIAN D.P. SERVICES LTD.

SENIOR OPERATORS AND OPERATORS

Salary Range £4,020-£5,110 (under review)

Heva you 9 to 18 months G3 or OS/VS experience?

Use It to your edvantage of London Transport's Dete Processing Department near Oxford Circus.

We heve vacencles for Senior Computer Operators and Computer Operators. Satery range £4,020-14,440 for Operators and £4,480-£5,110 for Senibr Operators, ncluding Shift Allowence. (All selarles era under review);

The instellation currently comprises 2 ICL 1904S, 2 ICL 2904, IBM 370/148 and IBM Series 1 computers hendling Batch, Transaction and interactive Procassing and On-Line Enquiry Systems, Installation

Wa elso heva vecancies lora Dele Control Clerk and a Media Libraria Selery renge £3,250-£8,450 (also under review) ol e naw 2960 la imminent. under review).

Ceraer devalopment and promotionel prospects are excellent you will enjoy FREE TRAVELON LONDON TRANSPORT SERVICES AT ALL TIMES, glong with offe

valuebla travel concessions

Telephona our Serior Operation

Controller on 01-837 9144 of write to
en application form to State

Appointments and Development Appointments and Development
Officer, London Transport
55 Broadway, London SWIN 080
quoting reference 984/6

LONDON TRANSPORT

MYRIAD

MANAGEMENT SERVICES MANAGER

LONDON

c £12,000 + Car

Our Client, Weltis Fashion Group, is an independent public company and are leaders in their segment of the fashion market who design and menufacture fashion merchandise exclusively for their own chain of retall outlets. Vertical attegration coupled with a strong investment in DP has clearly paid dividends. Sales turnover has increased sixfoid in the last six years and there are equally ambitious growth plana for the future. They are now seeking to appuint a Management Services Manager.

The Management Services Manager will primerily be required to establish and recommend short medium and long term strategic plans for the provision of all information and systems services within the compony. The range of responsibility will encompass established O & M. Operational Research. Business Analysis and Computer departments. The successful candidate will report to the Group Financial Director and be responsible for evaluating and co-ordinating the development and implementation of new systems within agreed budgets.

The Management Services Manager will have proven management ability and a record of successful achievement in the application of both computerised and manual Information systems in a commercial environment, idealty in the age range 30-40, with a degree or professional qualification, candidates will need to have strong personnel authority and the ability to obtain acceptance and commitment to new idens and systems.

The company's head office is located in North London from which its retoil activities throughout the U.K. and Europe are controlled. Involved in its own product design and manufacture, the company has an outstanding record of successful expansion in recent years and can offer a choicenging and progressive future. In addition to first-class conditions of employment the position is enhanced by the provision of a company car. P.P.P., Pension Scheme, staff discount and a commencing salary in the region of £12,000 per annum.

Ref: AP1/1904

MYRIAD APPOINTMENTS LIMITED 30 Fleet Street London EC4Y 1AA 01-353 0981



Microprocessor Software Design

Tayside, Scotland

NCR is the number two computer systems company world-wide.

A major part of its success is derived from microprocessor based special- and general-purpose terminals.

At Dundee we have developed a highly successful self-service banking terminal.

We now need additional Microprocessor Software Designers (male or female) of one to five years' experience to design new self-service-terminals and to help determine the architecture of the next generation of terminals.

The people we require will be experienced in

-Assembler programming ...Mini/micro operating systems -Communication Softwear

The rewards at NCR include a negotlable salary, 35 hour week (pald overtime at premium rates), pension and life assurance schemes, génerous relocation assistance and the possibility of U.S. travel.

At our unique location on the coast, close to all the premier Scottish golf courses, with ski slopes on the horizon, we offer a quality of life second to none.

in return, we expect professionalism. dedication and sheer hard work.

Interested? Then please write, giving brief career and personal details to:

ian Hume. NCR Ltd. Engineering & Manufacturing Kingsway West, Dundee DD2 3XX





London Up to £8K

PDP-11 **Project Leaders** Senior Programmers

C. London £6-9K

Minis-Micros

Designers,

Programmers

H. Counties & Cheshire

£6.5 - £9K

Database

Designers & Analysts

Holland, Germany & London

£6-8K (U.K.) £10-15K (E.E.C.)

Classifieds

Tei:01-409 0468

360 Oxford Street,

London. WIN 9HA.

Would you like to join the Dutch subsidiary of a world leader in Mini & Micro computer applications? The company Itself is a British Mini Software based International group with offices In five continents. They specialise in the supply of Bespoke turnkey systems based on Mini & Micro processors specifically in the Communications. Message Switching. at Logica Holland & Belgium Network, Process Control and basic software lields. Any assembler language is desirable. To meel their expansion goals they are £10,000 - £16,000 p.a.

> Aprestige Client with Headquarters in London and regional offices located in Cheshire and throughout Europe urgently requires the following: Real-Time & On Line Programmers & Systems Designers, Database & Compiler specialists with 2.5 years solid experience. Of particular interest would be people with elevant experience in one or more of the following: DEC with either BASIC, RTL II or CORAL, IBM or ICL with COBOL, Assembler or PL/1. Also Ferranti Argus or IMS_or

A prestigious Systems Group, subsidiary of a

multi-national corporation has retained

Matrix to aid in recruitment of new project members. Our client requires Programmers.

Project Leaders and Systems Designers with either PDP 11 or NOVA 3 experience using

PASCAL or Mini Assembler. Previous

involvement in control systems based on

multi-processor configurations would be an

advantage but is not a prerequisite. Senior

appointments anticipate 4 · 5 year directly relevant experience. Whilst salaries are high,

The foremost British Systems and Software

The foremost British Systems and Software Consultancy Group is seeking Senior project members in the areas of Data-Communications Message Switching and basic software. A prerequisite isexperience of pDP 1 i based systems ideally using RSX 1 IM. Analyst/Programmers will be skilled in the use of either Coral 66, Macro 1 i or PASCAL.

These appointments are for a new Real Time

Systems division and successful applicants

will have the opportunity to establish

themselves at a very senior level in a short time

Database design specialties are welcome. The scope of projects is both broad and An International client with offices in London and Europe is entering another major expansion phase for which they require additional Database expertise including Project Leaders, Systems Designers, Analysts and Senior Programmers. The latter should be skilled in either PL/1. COBOL. Assembler or Mark IV. Both Database and Data-Communications experience would be welcome. Applications are varied but include Banking systems, Airline booking and Stock control. Not less than two years relevant

BASIC or CORAL programmers with either commmercial or scientific backgrounds required by important Central London based Client. Permanent or contract positions available at salaries of £6-BK or £235p.w. up. Ref. 2203/6

experience will be considered and for more

COBOL or PL/1 programmers are required contract of permanent by a City Institution, IBMOS is preferred but DOS considered. Two years min, experience essential. Salary: From £5 · 5.5K plus 2½ % mortgage subsidy or £250 p.w. Ref. 2203/7

ANALYST/PROGRAMMERS required for Croydon area, IBM OS, COBOL, PL/1 or Assembler. Financial systems experience an advantage. Salary up to £8.5K. Ref. 2203/B

CITY — Systems Program mers for Merchant Bank with 370 OS experience including PL/1 or COBOL would be advantageous. Salary c.\$6.5-8K + mortgage.

BRUSSELS — T.P. and D.B. Applications and Software Programmers. Prefer IBM software. Full relocation expenses and vasi range of real company benefits whilst salaries to £16K. Interviews at our London office. Ref. 2203/10

BERKSHIRE/HANTS BORDER — Micri specialists (Intel B0B0, Zllog Z80) required by the company can oller outstanding career positions. Salaries 10 £8K + . Ref. 2203/11

the prime attractions of these positions are job

interest and growth potential. If you are an achieved Real-Time Mini or Micro specialist

our client promises to meet any realistic expectations and will complete interviews and

make offers without any of the customary delays. A number of (ringe benefits

accompany this excellent package and a

company car will in many instances be provided. Please telephone quoting this

span. The Group anticipate oflering salaries

well above prevailing market levels with the

objective of attracting top expertise. In addition to an excellent salary you will be offered an excellent package of fringe benefits and the promise of an early review. Travel

opportunities are available to those who enjoy

visiting Europe on business. A company car is

available to some of the Senior appointees.

Interviews will be held in London as soon as

creating numerous additional specialist

project teams requiring Consultants, Project & Team Leaders, Analysts and Programmers

at various levels, specifically a) 5 years plus b)

2-5 years c) Trainees up to 2 years. If the idea of working at the sharp end of sophisticated

technical computer pioneering appeals and

joining a very prestigious company is

meaningful in your career development then

you must give consideration to these

demanding and certainly in keeping with the prestige of this client. You will play an

important role in project development and

will be given considerable autonomy in

developing your technical expertise and

enhancing your contribution to the work of

this reputable group of which you will be more

than proud to be a member. Matrix have been

given a brief to pre-select suitable personnul

and to recommend salary grades in line with

on experience of prevailing market levels. We

anticipate Salarles of between £6 and 910

senior positions 4 years is the minimum, C.K.

based personnel may have frequent opportunity to travel to Europe and the U.S. (il

desired). Europe based personuel are given

very generous expenses and Irequent paid trips back to the U.K. Saiarles needless-to-say

are going to be well above the normain keeping

with the client's prestige and the importance

which they place on the acquisition of these

key personnel. You will be interviewed either

In London or flown out for the day to

Amsterdamor Frankfurt.

beingaccepted.

Rel. 2203/2

Ref. 2203/3

Ref. 2203/4

Ref. 2203/5

dvertisement reference.

applications are received.

DENMARK + GERMANY - IBM IMS and/or Univac 1100 DBMS applications exposure required for early 1979 start. Prefer permanent careet person but consider contract. Ref. 2203/12 person but consider contract.

IMS Analyst Programmer: O.S. with either COBOL, PUI or Assembler experience. Central London based. Salary dependent on experience to \$B250. Financial systems background preferred bul notessential. Ref. 2203/13

Senior Programmer

Wyeth Laboratories have modern offices situated in attractive grounds at Taplow, Moldentie ad, Bookshire and a Pharmaceutical

The Data Processing Department at Taplowis. accounting systems.

A mature person with good Assembler and position. The successful applicant will be expected to influence the direction of

For more information please phone our Computer Manager, Mr. R. Shadwall on Stough 28311.

Mrs. J. Andrews, Personnet Otticer,

SYSTEMS ANALYST ANALYST **PROGRAMMERS Management Information** in Television

London W.12 £5,890-£7,745p.a. (under review)

operates a comprehensive and highly and transmission processes. The system catalogning, scheduling and even the generation of graphics for broadcasting. We run on ICL, 2960s, 1964's and min

We need Systems Analysis with a keen interest in computer consultancy and wide experience of system design and implementation, especially of terminal-based

Relocation expenses considered. Fur further juintmation and an application form telephane, Jeun Bunach on 01-743 8000. extension 4583/7485 or write direct to

Production Unit at Havant, Hampshire.

to provide a teleprocessing saivica to the Havant for ation in 1979 and this appointment is to be made to assist in the developmentand implementation of production control and

PL/ Leaponence is required for this senior programming in the Company and is therefore, likely to have had DOS and TP experience.

or apply to

Wyalh Laboratories, Huntercombe Lane South, Taplow, Maidenhead, Berks

TELEVISION COMPUTER SERVICES, successful MIS, used by alblepartments in the planning and control of the production forms a base for other applications in costing

We also need COHOL programmers with a minimum of two years experience, capable of preparing a software project from initial design to final testing.

Appointments Depurtment, BBC, London WIA IAA, quoting reference no. 1219/CW

BBG tv

To £6,800 plus benefits

We're Britain's largest passenger transport operator outside London and rapidly expanding our Systems & Data Processing Department to help us keep in the forefront of new transport ideas.

We shall be using our new PDP 11/70 (with DEC's ndvinced transaction processing softwore—TRAX) front-ending our mainframe, The PDP 11/70 forms the heart of a new distributed processing network covering all Greater Manchesiar Transport's

hus depots. The Initial applicution is TOPIC, a comprehensive database capture and management system which is the foundation Int is set of advanced computer-using systems Mr.J.S. Horsfield, Recruitment Manager unique in UK public transport.

As a Systems Designer you would design and implement cost-effective applications wilbin the Corpninte Systems Development Plon, working with a piuneering tenm seeking to solve the challenging problems of tomorrow's public hunsport needs.

In addition to a top solory, the job uffers an attractive reincation puckage worth up to £750, and free travel by rail in and from work and by bus at all times in the Greater Molichester Transport area.

This is an exciting and challenging folio-remaining in every sense if you think you measun up, write lu: GREATER MANCHESTER

PASSENGER TRANSPORT EXECUTIVE 2 Devonshire Street North Manichester Mig 818. Manchester JUL Transport

Software Designers for Micro Based Systems

JBA

London/South We have been asked by our client a micro systems house, to assist them in the recruitment of additional design programmers. Responsibilities will embrace all software aspects of new development work and the successful appointees will be expected to make a significant contribution to the projecta Applicants must have had previous experience in other operating systems, compilers or communications facilities and be anxious to broaden their expertisa to include micro-processor technology. Programmers should be able to demonstrate a substantial background in ASSEMBLER lavel languages. In this dynamic and growing environment your long term career prospects

will depend very much on how committed you can be

Programmers & Analysts (Insurance company)

up to £7,900 + mortgage subsidy + benefits One of the most prestigious insurance services cumpanies in the UK with an impressive 40% growth factor last year, are recruiting additional staff for davelopment work. Many systems are under wny including installation of a DMS 2 database and a large real-time terminal network. Completion of thase projects opens the way for a considerable number of additional systoms thus ensuring creative work for the future.

Programmars must have at least 18 months COBOL experience in a batchur real-time environment. Analysts should have real-time commercial ur accounting applications experience preferably at a Scalor project level.

First class location, outstanding employment package and a realistic curver growth. Call for more details. Contact: Mike Creamer

COBOL Programmers

Berkshire based up to £7,500

Our client, one of the leading soft ware locuses in Europe, wishes to appoint several Programmers to work on the development of commercial applications Candidates must have nt least three years experience of COBOL, preferably on a mainframe such as IBM, ICL or Honeywell, and have a background of accounting, atock control or production systems. Knowledge of real-time or database would be un advantage.

Excellent salaries and career opportunities in a rapidly growing company. Contact: Jini Baker

Industrial Systems

London based i up to £8 Our client, a well established Unitiah organisation who are leaders in the up to £8,000

industrial mul process cantrol systems field, wish to recruit several Designers and Programmerata work on the development of sophiatiented real-time

Candidates should have ut least three years in either, the duaign or programming of industrini/nutomation systems. Knowledge of RTL/2, CORAL, PDP 11's or similar minicomputers would be an advantage.

This is an excellent opportunity to wark on new technology, including micros. and to travel. Large company henefits.

Contact: Jim Baker

Contact: Margaret Stevens Development Programmers

Hertfordshlre/Overseas travel

This computer manufacturer requires more staff to develop internetivo systems involving mini and micro technology. Projects include a considerable undunt of work on communications software and new package creation plus

the added interest of customer licison. Applicants must have a formal qualification and between one and five years experience of ASSEMBLER (or similar low-level language). Knowledge of data entry systems or mainframe experience is desirable. Great opportunity for interesting work and travel to Europe and USA.

Contnet: Mike Creamer

Micro-Systems Support

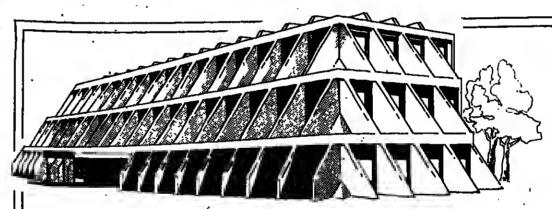
This is a real "ground-floor" opportunity for an Analyst/Programmer to join a new company which is marketing proven micro-processor based business systems. The company is still extremely small but has already received an incredible number of orders - the directors had never expected early saccess

on such a scale and are having to expand much sooner than originally anticipated. Experience of Assembler-level programming is essential as the appointer will initially fulfil a pre mid-post sales role - obviously significant exposure to commercial systems would also be useful. Longer term the company hopes to

develop its own software fearn. "Perks" are naturally limited at this stage of the company's existence, but use of a company cav and even the possibility of a cannaission scheme is envisaged. Contact: Anrly Wright

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the abuve positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants 16 Maddox Street, London W.1. Tel: 01-491 4478



ICL 2960 comes to STRATFORD, E.15.

Wa recently advertised for essentially applications development staff, now in Phase 2 of our recruitment we are interested in Technical Support Analysts and Programmers. Are you:-

Interested in Software, Database, Communications, Operating Systems?...if so you can enjoy-

- * a friendly environment, good management
- * flexitime, up to 26 days holiday, paid overtime
- * easy travel near Stratford tube and main line - without travelling to the City

The hardware will be a 2MB ICL 2960 with IDMS, IDH, MAC and Will be installed in July. These positions are open to male and female applicants so for an initial discussion and comprahensive client details, please telephone (24 hour service), complete the attached coupon or write to the address below — quoting ref. CW: 23.9T

Technical Analysts

To C. £6300 + July Increase

Reporting directly to the Technical Support Manager, these are responsible positions, controlling projects, making decisions and developing other staff. Responsibilities include investigating softwere/hardwere problems, tuning and supporting VMEB, modifying manufacturers and in-house software, meintaining databese and communications softwere etc. Applicants should have eround 4 yeers programming experience, probably COBOL or PLAN plue en interest in or knowledge of operating systems, Ideally GII, GIII, VMEB.

To C. £5700 + July Increase **Technical Programmers**

Being involved in similar areas to those of the Technical Analyst, applicants ideally should have 3 years programming experience with experience of technical problem solving.

Junior Technical Programmers C. £4500+ July Increase

These positions will interest applicants with around two years. programming axparience, probably COBOL or PLAN, wishing to astablish an interesting career away from Applications.

+ A Career Path out of Operational

Trainee Technical Programmers C. £4000 + July Increase

Training in programming will be given to suitable applicants with proven aptitude, possibly Senior Operators or Shift Leaders with GII, GIII or VMEB experience.

Ref.CWJ23	-9T Please	end me fi	ırlher deta	lls and en
application	i (orm			
NAME ADDRESS		-	وه جواز نخسه استهند. در در از	
HOME TEL		BUS	TEL NO:	
The state of the s		(USE	D DISCREET	
REQUIRED	POSITION			

COMPUTER AND MA CAPP ASSOCIATES LONDON AND MANCHESTER

01-686 9693 A.M.P. HOUSE DINGWALL RD. -CROYDON, CR9 2AU

31

It pays to go Dutch

We must not forget we are Europeans and that working in the E.E.C. is free of "red-tape": and in Holland, at least, you will have little or no language problems.

Why not put your Mini or Micro expertise to work in friendly Holland where you will be exposed to true forefront applications in the fields of: Mini & Micro based systems, process control, message switching and computer based communications networks.

> Our client, based in Holland, ideally requires graduates (or equivalent) in computing or related subjects. If you are an Analyst, Programmer, Systems Designer or Consultant we would like to initiate confidential discussions regarding joining our client in Holland. We anticipate salaries in the range of

> > £9-14K



Avon House, 360 Oxford St., London. WIN 9HA. Tel: 01-491 4636 Telex: 28800 Londof G.

STEVENAGE COLLEGE DEPARTMENT OF SUSINESS AND PROFESSIONAL STUDIES

LECTURER GRADE II in COMPUTER STUDIES

(with experience in Book-keeping and Accounting Systems)

Applications are invited from suitably qualified parsons lot the above post, which is tenable from 1st September, 1979.

Further datails and application forms, returnable within 14 days of the appearance of this odvertisament, are evallable from the Principal, Stevenage College, Monkswood Way, Stevenage, Harts SG1 1LA.

This is a re-edvertised post; all previous applications will be

The BANK FOR INTERNATIONAL SETTLEMENTS, an international majurition localed in Basia, Switzerland, hos on opening in lis

TECHNICAL SERVICES SECTION

A centralised computer system is at present being installed in the Bank and initially the job is to provide seelstance of a clorical nature to the computer personnel in day-to-day administrative work and the maintenance of system documentation. Subsequently, for the right person.

ideally the successful applicant would be in the ago group 20-25 hoving goined provious experience in a date-processing environment as this goined provious experience in a date-processing environment as this post will require lentillensation with, and use of computer-based facilities. Candidates should have a good command of English, a good working knowledge of Ostmen and bits compatent typist.

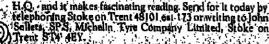
The Bank offers is good spiery, tiret-class pension and welfere schemol and other ancillary benefits. Assistance will also be given with relocation

Applications, giving brief but comprehensive details of previous experience and activities should be sent in confidence to the Passonnol Mensger, Bank for International Scattements, PtO. 8ex 262, 4002

Systems Analysts

Experienced in real-time and hatch applications development to H.O. and it makes fascinating reading. Send for it today by un Huneywell or Datapoint equipment? Then we've prepared state thing of genuine interest to you It amilaformation factor in the benefits of working with visit our Stoke on Trent. S.W. 4EV.

Trent S.W. 4EV.



SwitchtoMichelin

GET ON-LINE TO A BETTER CAREER IN SCOTLAND

Our clients, a mejor computer installetion in Centrel Scotlend, are elive to Our clients, a mejor computer manufacture are size in the present time, especially the repid developments in computing at the present time, especially computer assisted manufacturing control systems.

computer assisted management of the computer of the computer assisted management of the computer of the comput European sites, they are about to install an IBM 3031, develop DL/I Deta Base and move to the MVS Operating System.

Why not gat involved in these naw devolopments and be assured of working in a high technology and advanced training organisation? We have been asked to recruit the following staff for the plenned

Systems Progremmer with VM or MVS or OS/VS1 to £8,000. Candidates will provide the primary technical support for the installation.
Knowledge of the ebove IBM operating systems is preferred although candidates with a wide experience of DOS may be considered.
On-Line Systems Specialist to £7,500. This is a particularly interesting

vecancy. Candidates will work exclusively on the devalopment and tachnicel support of on-line systems and should have a specialist knowledge of teleprocessing techniques which should include in depth experience of CICS end/or IBM Assembler.

Sanior Anelyat/Progremmer to £7,000. Candidetes should be experienced in aystams design. The duties to be carried out will include ayatema feasibility studies, work ellocation end system instellation. Applicants should have e working knowledge of programming (BM COBOL and / or Assembler).

The company offer a progressive careet and selsiv structure, and excellent fringe benefits including generous relocation package.

> For further information and to errenge location interview telephone 031-226 6674, or write enclosing a detailed cereer

DML Computer Personnel Services, 11 Cherlotte Square, Etfinburgh EH2 4DR.



This is an opportunity to design, plan and manage the implement tion of a wide range of internating and unique computer communication systems. The computer systems range from the use of microprocessers for specific applications, through mini computers to lerge meinfreme systems employing the winds renge of periphers devices. The communication systems range from line commun through the full spoctrum of mdin communications including selection

Although the job has e high managorial content in that you directs teem, you lead from the front. The work involves the interpretation of project and the interpretation of proj definition of project studies, designs and plens which provide technical solutions and define and cost all resource requirements to imply

There ere opportunities to trevel within the UK and also for all and also for all and also for all all also for all also f

Candidates must have passed, or been exempted from a set hallo qualifying them for corporate membership of IEE or IERE, and have least 2 years' professional accordance. least 2 years' professional experience. Project management experience in the computer/communication field an advantage.

Starting salary between £4325 and £5735, depending on qualifications and experience. Salaries under raview. Promotion prospects

For further details and an application form (to be returned by 10 May 1979) write to Civil Service Commission, Alancon Link, Bealing Hants, RG21 1JB, or telephone Bealingstoke (D256) 68851 (1986) 88870 ce operates outside office bours). service operates outside pilica hours). Pleese quote T(D)88/



Contract Vacancies

ICL 2900 VME/B Cobol

We have requirements for programmers, analysis and systems programmers for long and short form 2900. contracts in Ut/Europe

PDP Sasic Programmers - HOLLANO c. £20,000 p.a A large successful Chemical Company have immediate and future vacancies for Basic, Basic + 2 and Mimps people to work on a variety of different systems. Remuneration will be c. (20,000 p.a.

Microprocessor Experience - W GERMANT We are seeking candidates with sound INTEL 8080 experience or similar background for forthcoming assignments over the next few months. First time contracts are welcome to apply.

ISM OS COBOL + IMS 18M IMS Systems Analysis 18M OS COSOL + IMS -KENT -LEICESTER

HONEYWELL COSOL + IOS

IBM OS COBOL + IMS IBM OS COBOL + IMS IBM FORTRAN -BEDS. -LONDON --NORTHANTS --W. LONOON IBM SYS 34 RPG II VENTEK Datashara **PDP** Oatabase

-HANTS -N. LONDON

DVERSEAS ICL 2900 VME /8 Systems Programme INTEL 8D8D PDP FORTRAN PDP FORTRAN A.P.
PDP FORTRAN + real-time

Communications ICL COSOL

-LONDON -SURREY

-GERMANY

-GERMANY

-HOLLAND

-HOLLAND

Call Richard Kaluzynski, Heil Williams or Suzy Gillam for details. All vacancies are open to both male and female applicant:

Phone anytime, or for an application form leave your range

Knight Computer Services Ltd.,

14 Old Park Lane, London W1 i HHL

and address with our answering service.

Salt School Proposed Bell of Street Control of the Street School Street Street Street School School Street Street

Experience? Earn up to £12,500 p.a.

We have an increasing number of vacancies for programmers with experience of IMS. If you have these skills and would be available to start work at any time in the next three months, a call to Neil or Richard at once would be well worth while.

If you don't generally do contract work you may still find that we can offer you some interesting alternatives. And we're part of the BOC Group --big IMS users themselves.

01-491 4706

Terminal Systems

Howson-Algraphy operates a network of ICL 2904 systems throughout Europe, Including a large TP network of intelligent terminals in Europe, including a large TP network of intelligent terminals in the U.K. Applications include Stock Control, Order Entry, Process Control (using a PDP11), On Line information Retrieval and comprehensive commercial and accounting systems.

The Company expects to install twin ICL 2950's as well as extending its terminal network in the near future.

A vacancy exists in the Terminal Systems team for an

Analyst Programmer

The responsibilities of this team include evaluation, selection and planning of terminal requirements plus software support.

Experience of Assembler-level programming or ICL 7502 TPL is an

This position provides an attractive salary, excellent conditions of employment and profit sharing scheme, Assistance with relocation will

be given, where applicable.

Please write or telephone for an application form, to:

Mrs S G Bateson, Group Personnel Assistant,

Howson Algraphy &

An Operating Group of Vickers Ltd.



Computer Centre

The ability to lead and innovate?

We require a Head of Dopartmoot for our new Computer Centre with the obility to lead and annovate. This opportunity is a result of the installation of one of the most edvanced computing systems in a Polytechnic. computing systems in a Polytechnic.

Applicanic should hove a substantial computing systems in Education Industry /Commistee.

Salary within a tange of \$2500 - 26000 (Burnham Grads 5 or 0.2 (f) + 5) (re-devertigament previous applicants still being consistered).

Application form and further details from:

Farsonies! The Polytechnic, Wulming Earses!

Wolverbampton WV 111V

SYSTEMS PROGRAMMER Applications Invited for a System Programmer in the Computer Section The University computing section in the Computer No. Section 10 march 10 marc

INDEPENDENT OPERATOR -NO SHIFTS

c £5000

A leading British company require an OPERATOR to work in their Consumar Products division controlling a MiNI-COMPUTER. The company is heavily committed to Computing, having several installations, and CAREER PROSPECTS are excellent.

This is an Ideal opportunity for an Operator to davelop his TECHNICAL and SUPERVISORY skills in e atimulating environment and ellow him the opportunity to learn naw disciplines. The aucceasful applicant will have 2 years expariance geined on any mainframe and the ebility to deal with Usere' parsonnal on a daily basis. He will be given training in PROGRAMMING and would assist with maintaining the current

The installation is altuated in LEWISHAM end very easily eccassible by public transport. Company fringe benefits are standard for such a large organisation, and include PAID-OVERTIME, SUBSIDISED MEALS, STAFF DISCOUNT of company products and CONTRIBUTORY PENSION SCHEME.

For further details contact: TUNBRIDGE WELLS (0892) 35712/3/4 24 HOUR SERVICE

MOUNT PLEASANT TUNBRIDGE WELLS TELEPHONE TUNBRIDGE WELLS 35712/3/4

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 moon on a Tuesday

Hing David Abbey for further details on 01-261 8016,

Atlast.

A contract agency that won't expire with your contract.

If you like freedom and variety, contract work has many advantages.

But freedom and variety aren't worth much if the company

that placed you vanishes into thin air on pay day.

Now there's a computer contract agency with a name you've actually heard of. John Goldsmith. And we're here to stay.

We're backed by the Provident Financial Group - and a proven 10-year track record of placing people on assignments. We understand computer people, because we are computer people ourselves.

The man in charge of our new Contract Staff Division is David Garnsey: (Another name which should ring a few bells). What he doesn't know about contract work isn't worth knowing.

He also believes in getting to know his staff, and keeping in contact. Whether you're working in Putney or Paris, he makes regular visits to make sure that everything is working out as it should.

You get all the benefits and security of a good permanent job plus permanent health insurance, advice on taxation and company formation, travel insurance, subsidised BUPA and - of course - prompt payment.

Maybe you are on contract, or between contracts, now. Or perhaps you've always wanted to try contract work, but have somehow never got round to it.

Now is the time to act. Call David Garnsey on 01-828 4739 or 01-828 5356.

And we guarantee that when your contract expires, we'll still be alive and well.

John Goldsmith Computer Professionals on Contract



Computing John Goldsmith (Computer Recruitment) Ltd., Contracts Division, Asphalts House, Falace Street, London S.W.I.
Services Telephone of Sas Sizes #4 hour answering dervice, Telex; 918778
Association Recruitment Consultaints
4 Company of the Provident Financial Group

PROJECT LEADERS

London based

£6000-£9000p.a.

If you find your present environment restrictive, you can realise your full potential with one of Europe's most successful consultancies, working in the fields of computing and communications. In return for hard work and initiative, they can offer you variety, challenge and the opportunity to work on some of today's most advanced computer systems.

Currently they require project leaders and system designers for a wide range of projects. Candidates will need the ability to work on their own initiative and to communicate effectively with others. At least three years' post-University computing experience in one or more of the following areas is desirable:

● Real-Time Systems ● Databases/Information Retrieval

For further details concerning these appointments please contact Eddie Howard.

Edmund Howard & Partners

5 Brighton Road Surbiton Surrey England Tel-01-399 9183

SALESMEN

GUARANTEE £10K

QUOTA=£17K

TAKE UP THE CHALLENGE SUPERB OPPORTUNITY

Become a key member of one of the UK's most successful systems houses (£3,000,000 sales in first full year), utilising the highly successful DEC range of mini computers.



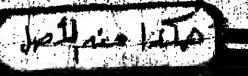
They offer the following benefits:

- *INITIAL GUARANTEE C. £10K
- *TARGET EARNINGS £17K
- * CHOICE OF COMPANY CAR
- * EARLY MANAGEMENT OPPORTUNITIES
- *EXCELLENT SOFTWARE PRODUCTS
- *LARGE PROMOTIONAL BUDGET
- *GROWING CUSTOMER BASE
- * BIG COMPANY BACKING

DON'T HESITATE PHONE 01-486 5644 -- NOW FOR EARLY INTERVIEW -- QUOTING REF, CDW.



INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD. 72-75 MARYLERONE HIGH STREET LONDON WIN AAJ PHONE 01 486 5644





MYRIAD **APPOINTMENTS** LIMITED

Computer Personnel Consultants

SYSTEMS ANALYST

(Databese Applications)

CENTRAL LONDON

Variety, challenge, responsibility and reel career potential; this post is within e fest expanding bureou marketing e comprehensive range of time sharing applications utilising powerful database and transaction processing softwere. The euccessful applicant would undergo e period of treining in the first instence followed by a variety of small projects involving both in-house end on-site working, designing and implementing client systems.

Applicants will have a minimum of five years' commercial D.P. experience involving et least one project, cerried from Investigation through to implementation, together with an ability to function well in a cuetomer orienteted situation. Repid promotion is e very reel prospect for the successful applicant together with increased responsibility and rewards.

> 24-hr. answering service Please telephone for a confidential discussion or write to: 30 Fleet Street London EC4Y IAA

Get in First.

Analysts and Programmers for rapidly expanding business systems house

Based in Twickenham, London.



DATA COMMUNICATIONS. CORPORATION Thames House, 5 Church Strest. Wickenham, Middlesex TW13NJ. Tel: 01-892 3685 Telex: 8813327.

We're DCC — one of the country's testeet growing businese systems houses. We're pert of en international orgenisation and from a standing etart in the UK just over e year ago we've opened a whole range of preetige accounts in commerce, government and the utililes. If you join us now you'll be 'in on-the-ground-lloor' with a company ihal respects people who get results ... eo your career prospects will be excellent.

Right now we need more Analysis and Programmers to help ue eell and install e renge of proven finencial packages which use the highly succeastul Data General Computer range. They're recognised as the beet in the bueinees and cover all aspecie of accounting eyetems, plus dela collection, communications end dietributed procassing aysiems, property management and so on.

Analysis should have around 5 years experience in eystem design and be in the age range of 30 to 35. COBOL experience eesential. We have e policy of promotion from within eo you'li have every opportunity to progress to project leader end on to managemeni in applicelion/technical support.

The salery package, which includes contract bonus and car, will lake you into the £10,000 a year

Programmers must have 3 years experience in COBOL and will receive a salary package of up to

Just telephone Mike Perritt on 01-892 3685 reversing the charges if more convenient,

UNIVERSITY OF WAIKATO **LECTURER/SENIOR LECTURER** IN COMPUTER SCIENCE

The University livites applications from autiably qualified parsons with teaching interests in any of the fields of Computer Science for a new position of Lecturer / Seince science in Computer Science. Applicants should either hold a vesselich degree in Computer Science or have priviously held in scademic appointment or hive considerable experience in the scalarities appointment or hive considerable experience in the scalarities and design of information evaluates. From present interests in systems scalarities, and applicate and be experient to develop bourses at both undergraduate and gescites levels and so participate in research work of the University. Participate interest to those room which prises to the development of software technology for the interest to those erosis which retise to the enveronment.

New Zeeland economy would be as several or a.

The during selay range for tackeres is RZ4-11.384-914.815 per annulm end

Series Lecturers RZ4-14, 933-917, 145 x 1 18, 555 per annulm.

Conditions of appointment and implified of application, are available from the

Registrar, University of Walletin, PARIES Bag, Harriston, New Zeeland, or from this

Association of Commonwealth Universities (Applic.), 35 Garden Squing, Leindon Applications digin on 1 June 1978

CLASSIFIED COPY

All classified copy should reach our offices no later then 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork lessibled 12 roon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.

SYSTEMS ANALYST up to £7500 p.a.

A systems analyst is required by Barclays Unicom Group Limited, a leeding Unit Trust end Life Assurance Company, at their East London Head Office.

The position requires a person with the ability to motivate others. The analyst will be responsible for the development of commercial systems to support the expansion of the Life Assurance aide of the Group's operations. Hc/She will be seeking to enlarge his/her experience in a financial environment and to be in a position where practicel ideas can be put to good use.

We use an ICL 1904A under George III while a changeover to a 2900 system is planned. A Data General Eclipse mini with 1/2 megabyte main memory and 16 VDU's is being installed as a front-end to the main frame systems.

The auccessful applicant will need sound systems experience end will probably have gained this in a commercial background. Knowledge of ICL 1900 Disc end Cobol and/or Life Assurance systems will be adventegeous.

The salary range is £6,000-£7,500 p.e., plus productivity bonua. As a Barclays Bank employee, the conditions of employment and fringe benefits are substantiel end include a noncontributory pension scheme, steff resteurent end luncheon vouchers, 5 weeks' holiday, a profit-sharing scheme and also a special house-purchase scheme.

Applications should be made in writing to:-

Staff Manager, Barclays Bank Trust Company, Juxon House, 94 St. Paul's Churchyard, London EC4M 8EH

BARCLAYS

The Country's most successful Recruitment Service

Mini- Computers

BirmIngham

The world of the mini- is becoming increasingly sophisticated and requires ever more specialisation which means that those having the expertise are in increasing domand. One of the most interesting systoms currently being installed is planned to incorporate unique order nntry system combined with production scheduling and shop floor datn-collection. The company concorned is part of en international group, the hardware Fluwfolt-Packard, the backup tacilities impressive and enroor prospects and conditions excellent. If this interests you und you have analyst or programme experience on minis or possibly in good mainframo beckground and e desire to learn new techniquos — then please contect us. A full

relocetion peckage is aveilable if neceasary. Telephone: 021-643 7226 (24 hr. service) quoting Rel. 1108/CW. Reed Executive Selection Limited, 6th Floor, The Rolunde, Birminghem B2 4PB.

The above vacency is open to both male and femals candidates

SOFTWARE ENGINEER

UP TO £7,500 P.A.

we are laaders in the field of advanced meterials test aquipment, and need a experienced engineer to augment our software sales department of the design of the team is small, so you will be given immodiate involvement in the design of the team is small, so you will be given immodiate involvement in the design of the team is small, so you will be given immodiate involvement in the design of the desi

Mini computer experience is essential, preferably involving the use of Fortier and Assembler on POP11. GEC 4000 or Hawlett Packard 1000 Series Salary, is negotiable up to £7,500 p.e. according to experience with relocation expenses where appropriate.

Please apply in writing, or telephone:
The Personnel Manager
Servicest Limited
Servicest Road
Greenford, Middlesex USS 744



"During this financial year we will increase our turnover by 30% (in real terms) and the number of staff employed will rise by some 150 people.

To fill these positions it is essential that we continue our intensive staff advertising, at the same time maintaining our policy of selecting only the best people." Bryan Mills, CMG Group Chairman

* are earning between £4,000 - £12,000 p.a.

The second control of the second seco

* want to develop your career

* want interasting and challenging work

* have a minimum of 2 years commercial systems and

programming experience then WE WANT YOU to make our planned expansion and davelopment a REALITY With CMG you will have

* career security

* axcaptional promotion prospects

* top laval salarias

* a wida variaty of work from programming to consultancy using minis and mainframas to solve a wida ranga of commercial business problems

Salarias ranga from

LE. DOO to KIA, UM

bacausa wa have a wida ranga of raquirements. Additional benafits includa

* Free Lifa Assuranca and Pension Plan

* BUPA Family Covar

* 21-26 days annual holiday

* Profit Sharing Schama * Removal Expanses

ACT NOW, aithar talaphone your local CMG office or complate the attached coupon and post it to us to

recalva an application form.

Plaasa sand ma An Application Form

A copy of your booklat CMG 1978/79

Janet Stirling

CMG (Scotland) Ltd.

58 Waterloo Street

Glesgow G2:70A Tel: 041-221 B193/6

Highland Housa

Computing

Member of the Computing Services Association

Services

Association

CMG Computer Management

Shalagh Tills

Wastway House

Group (Middlesex) Ltd

320 Ruislip Road East

Greenford Mrd leage U36 98W [Jah 01-678 4563

Telephona_ Please quote ref: UK/10

Colln Smith

78 Leman Street

London El 8EY

Tel: 01-481 3881

London · Frankfurt · Brussels · Glasgow Amsterdam • Rotterdem : Menchester

Wendy Maynerd CMG (Southern) Ltd CMG (City of London) Ltd Sunley House Bedford Park

Croydon CRO 2AP Tel: 01-686 8251

Janet Gothard CMG (West End) Ltd Telford House 14 Tothill Street London SWIH 9NE Tel: 01-222:3521

A. [4] 在 2. 人名英格兰 多种的类型

The state of the s

PL1 PROGRAMMERS

West End

to £5500 + Mortgage

A laading commarcial organisation with an expanding 370/135 installation in the West End is seeking a number of PL1 programmers to work on a variaty of new end existing projects.
The positions are ideal for enterprising young

programmers with at least twelve months exparlence on IBM Hardware. A knowledge of OS/VS1, although not essential, would be a dietinct advantage. The company offers a first class salery, and fringe benefits include Flextime, Sasson Ticket Loans, and a

Reference PG16/1 COBOL ANALYST/PROGRAMMERS

C. London

Subsidised Mortgaga.

One of the country's largeat retail organizations is saeking eeveral people with e COBOL background, but with en interest in other languages.

They use a 370/145 & heva development projects for e 3031 in COBOL, ASSEMBLER & DL1, & you will naed around 18 MONTHS or more in any of these, Any Analysis or D/B axpariance would be helpful; however, training will be provided, making this en

idaal opportunity to divarsify your caraar. Reference PG 16/2: .01,439,7871

BASIC + PROGRAMMERS

City to C£6500 + Mortgage An International Benking Group require all levels of

BASIC+ Programmars to be involved in their new MINI Projects. A minimum of 6 months experience in BASIC+ le raquirad or, elternativaly, good exparienca in other languages would be considered for people who wish to enter the MINI field.
The Company have severel DEC PDP 11 Machines

coupled with large IBM Mainframes. Other attractions include Flexi-time. Bonusea. Subsidisad Mortgeges, and loans after 6 months.

Reference HK 16/3 ANALYST/PROGRAMMERS

An International Pharmacautical company based in tha West End with a range of MINI's and Mainfremee in key locations throughout the U.K. are assking Analyst/Programmers with a minimum of 1 years Anelyeie. A knowladge of CORAL 66 would be Ideal but ratraining will be provided to applicants with good programming and enalysia experience.

They offar compatitive salary plus ell the fringe benefita you would expect from a company of their aize and etanding.

01.439.7871

Reference HK 16/4: and the second substant and the substant and the second se

ALL OTHER MAINFRAMES

HONEYWELL GCOS Minimum of one years experience for senior operator. Prospacts Include opportunity to move into progremming. HONEYWELL GCOS One yeere experience on any mainframe needed for out of town GCOS site. No night shifte ere worked and excellent

relocetion package. **HONEYWELL OS2000** Cantrel London company is looking for an OS2000 operator with a yeer to 18 months experience. There are no night

shifts and ample opportunity for overtime. UNIVAC OS3 range for two shift job (no nights) in West London, Good

company diecounts apply. **DEC PDP 11/45** Applicants with a minimum of two yaere DEC exparience

and eged 24, or over, are needed for assistant aupervisor for a Merchant Benk. Only two ahilità and etandard benk Derke apply. BURROUGHS B1800/MCP

ejie Recruitment Lta House

開発的 1 mm 01-439 7871

Essex site is looking for a Burroughs operator with a months experience for days only position. Perks include discounts on interesting company products and progremming involvement.

01.439.7871

Reference SO 16/5

SYSTEMS ANALYST

West London

A well known financial organization operating an ICL 1900/2900 Inatalitation is seeking a Systems Analyst who is looking to expend on his present experience. The minimum axperience required is 3 years with at leaet 1 project seen through from feesibility to implementation. This would praferably heve been gained in a financial environment.

Tha Company benefits offered ere considerable Including a 5% MORTGAGE, 5% CAR LOANS, L.V.'s, e subsidied restaurant, and a very good sports and social club. Reference BP Reference BP 16/6

SYSTEMS ANALYSTS

City

A major financa company based in the City wishea to

to £7000

recruit edditional staff to work on tha development of new projects for thair expanding IBM 370 system. The individuals they are seeking will have at leest two years Analysis and must have implemented one major systam. Any knowladga of CICS or PL1 would be e diatinct advantage.
In addition to a highly compatitive sterting ealary tha

company offara an attrectiva benefits package end

excallent working conditions. Reference PG 15/7. 01.439.7871

CONTRACTS

THE PROCESS OF ARMED TO BE

FLUENCY IN

FRENCH GERMAN **DUTCH or FLEMISH**

WITH EXPERIENCE IN

DATABASE or TELECOMMUNICATIONS COULD LEAD YOU TO ONE

OF OUR MANY LUCRATIVE ASSIGNMENTS IN EUROPE.

CALL

BOB EDWARDS

TELEX 25851 01.439.1856 The state of the s

OPERATORS

Junior end Senior operators if you have e minimum of 6 months experience on

HONEYWELL **BURROUGHS** IBM NCR DEC UNIVAC

Do not hesitate to call us. We have meny urgent requirements in London and the Home Counties £3,500—£6,000

DATA CONTROLLERS

We have many vacancies throughout London and the Home Counties for both Junior and Sanior Data Controllers. Saleries from £3,000—£6,000

Computery Services Association

SENIOR COBOL PROGRAMMERS

West London

to C£7000 + Benefite

A major ratail group with an axpanding inetelletion is seaking sovaral Senior COBOL Programmers with e minimum of 3 years ICL 1900/2900 experience. Any The Company operates o retail distribution system with coneidarable real time involvaniant, thus offering the opportunity for paopla with solid axparience to gain valuabla Real-time exposure.

They offer vory good salaries with considerable benefite including ateff discounta, non contributory pansion and a subsidisad staff restaurant,

JUNIOR COBOL PROGRAMMERS

to C£5000 + Mortgage

Reference BP 16/8

A mejor financial organisation operating a twin ICI 1900 sarias inatallation is seaking saveral Progremmers with a minimum of just 12 MONTHS' COBOL. The Company is involved in a number of new financial systems ao any experience hara, although not eesential, would be more than walcome. In return thay offer very good salaries, 60p per dey L.V.'e, 4 WEEKS HOLIDAY, and a 32 HOUR WEEK, and if that is not anough than consider also their 3% MORTGAGE scheme!

Reference BP 18/9

01.439.7871 RPG II PROGRAMMERS

to C£5500 + Mortgege

A larga International bank urgently requires two capable RPG II Programmers to work on e whols renga of finencial applications on their IBM SYSTEM 34. All you will need is around 12 MONTHS' RPG II experiance, on any machine, and not necessarily within the financial fiald.

The appointments will offer good career opportunities and future exposura to Systems Analysis, as well as a Non-Contributory pansion, Saason Ticket loans and a 3% Mortgage.

Reference PG 16/10

MINI ASSEMBLER PROGRAMMERS

South West London

A email but rapidly expanding Software House based In London are currently ecoking Assembler Programmere with a commercial background to work in a Customar Support rolo. if you have around 3 years' Assambler experience on

either Mini'e or Mainframaa and would welcome involvement on e client contact basis then this: opening abould be of Intorost. The Company offere good solory plue peid overtime

and the chanca to move into Analysia. Reference HK 16/11 . 01.439.7871

The first of the second of the contract of the second of t

IBM & ICL MAINFRAMES

IBM 370 OS Finencial organisation requires Senior and Junior operators.

2 yrs experience including good JCL knowledge for the Senior post. Perke include mortgage allowance.

IBM 370 OS Operator with eround 1 yeers axparience required by large City company. Excellent career prospecte end en unusual ehift eystem giving pienty of frae time.

IBM 370 DOS East London installetion requiree Operators with 6 months 1 DOS exp. Prospecte of moving to programming in the

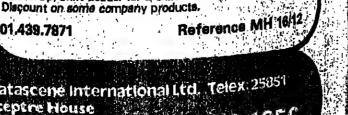
IBM 370 DOS Vecanclee axiet in sil areea for Operators with 6 mths experience in a variety of installations offering a wids range

ICL 1900 City based installation requires en Operator with ground 1/4 Gil axperience. 2 shifts only plus an Annual Bonus.

Shift Leader and Senior Ope required by lerge 1900 site GII experience essential, knowledge of Macros useful. ICE 2900 Senior Op/Shift Leader for 2 shift working 2904 installed

01,439,7871

Datascene International Ltd., Telex: 25851 Sceptre House 169-173 Regent Street 01-439 1856 London Win 7FB



Situated in N.W. Kent, and with a significant lead in the expanding Telecommunications field, our client is currently at the forefront in developing microprocessor based private telephone exchanges which will broach new ground in many areas.

MiniMicro Programmers £5000 to £8000 There is an immediate requirement of the live Operational Software for this involved in the development There is an immediate requirement for at least 2 Programmers to beconing the formula of the live Operational Software for this involved in the development of the live Operational Software for this project. involved in the development of the live Operational Software for this

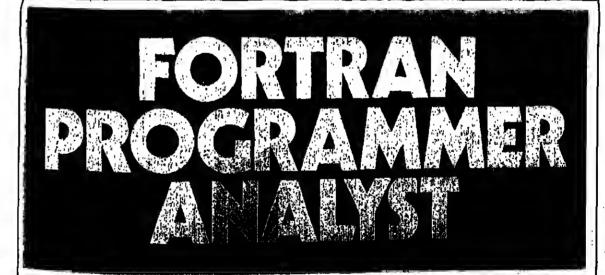
Real-Time Project.

You should have a minimum of 12 months' experience on either minimum of 12 months' experience on either HIGH or ASSEMBLER level languages, Ideally gained micro's using either HIGH or ASSEMBLER level languages. micro's using either HIGH or ASSEMBLER level languages, Ideally gained the within a Real-time environment.

Although these are Operating Systems for micro-processors, much of the done on IBM mainframes, although these are Operating Systems will be done on IBM mainframes, although these are Operating and simulation will be done on IBM mainframes, although these are operating and simulation will be done on IBM mainframes, although these are operating and simulation will be done on IBM mainframes, although these are operating and simulation will be done on IBM mainframes, although these are operating and simulation will be done on IBM mainframes, although these are operating and simulation will be done on IBM mainframes, although these are operating and simulation will be done on IBM mainframes, although these are operating and simulation will be done on IBM mainframes, although these are operating and simulation will be done on IBM mainframes, although these are operating and simulation will be done on IBM mainframes, although these are operating and simulation will be done on IBM mainframes. complifing, linking, testing and simulation will be done on IBM mainframes, thus offering a great deal of variety and interest as well as valuable exposure to a wide range of DP experience. to a mige tauge of Db exberience.

Inna ottering a great gear of Astiers

To find out more about these challenging and rewarding positions, call DATASCENE, and ask for PHIL GASCOIGNE.



Looking for a chance to get into commercial systems development? its not often that an opportunity arises for you to apply

your FORTRAN experience in a commercial environment. But just such an occasion has arisen.

機能USTACK OF BOOK OBSESS

APAGE TO SECURE AND A SECOND ASSESSMENT

清熱性性 しんしょう

milition company in the film processing business has recently installed a PRIME 400 compute with a large number of DDE screens to service their aboratories in the UK and on the Continent.

With initial mail order and sales ledger systems now complete, the company is at present setting up its own Systems and Programming Department and now requires an enthusiastic, but essentially mature minded, Programmer Analyst to head up the new team. A man or woman with at least two years' FORTRAN

entirely development work, both on existing systems and on new nominal and bought ledger commercial systems, so it should provide you with plenty of

In a pleasant Thames-side Berkshire location, the company is offering a salary of up to £6500 with free BUPA, subsidised staff restaurant, Christmas bonus and annual negotiable salary review. There are other perks loo and they tell us that they have a really friendly team, so don't miss this opportunity.

Phone or write to Andy Mogg for an application

up to £6500-Berkshire

Knight Computer Services Limited, 14 Old Park Lane, London W1Y 4NL Staff Services Division of BOC Datasolve Group and a member of Computing Services Association

01-491 4706

PROGRAMMERS

A lucrative and secure future in Western Germany

We are: The leeding bekery product menufecturer end producer in Germeny end ere besed in Pfungstedt (between Frenkfurt and

An ICL 1903 A, 96 K, 4 EDS60, 4 MT, 2 printers, document reeder and plen to change to new generation equipment by the

·Programmer(e) who can hendte ICL-equipment, GEORGE TPS and COSOL and who is willing to learn German.

Selery of around £10,000 p.e. with excellent prospects es well es other frings benefite. Relocation expenses are, of course, being taken care of by the company.

If you ere interested please contact:

Wilhelm Weber GmbH Backwaren Ostendatr 8 8102 Pfungstadt West Germany Phone number: 01049-8157-3061

Sending e CV and giving dates and/or times preferred for Interview, which will take place in May 1979, in London.

WESTFIELD COLLEGE COMPUTER SCIENCE RESEARCH

Applications are invited from potential research (students (full-like) end partime) with a good ling legipse in Computer Science or related supplect. Research areas ere Distributed Computing Dale Flow — Inctuding populating or in the light of the population of the population of the population of the population and templating and Processor design and singlepon.

Witte or phone (01-935-7141) for an interview to 37. Paler Compan Computer Solance Cappartment, Westfield Cologe, Nicklargore Avenue, London, NWS 781.

£4000+ North+Midland Analysts & Programmers 081-832-4184 lampson Staff

DATA PROCESSING CONTROLLER Liverpool City Centre

THE COMPANY: Established Liverpool Shipping Agents who at present have centralised accounting system based on VRC 400s will shortly be installing an NCR 8350 Computer.

THE POSITION: Date Processing Controller responsible to Accountant for overseeing Implementation of established peckages on an NCR 1-8250 Computer, and day-to-stay control of these systems. Configuration includes 4 VOUs, 10 Mb Disq Storage and 125 LPM Pinter using multiprogramming and on line terminals. Appointment will be for about 2 years with rentmeration negotiable of level appropriate to the position reflecting also duration of eppointment.

THE CANDIDATS: The successful applicant will have had proven experience in implementing and editoristing systems on a similar studence; and will be (iii) conversely with financial soccuping petroples. The postion is likely to surject an experience distribution.

Compliant Menigement withintons.

Applications will be treated in contidence. Please seleptions for further details to the E.D. Jones at 06 (235 4871) arriving series series of the E.D. Jones at 06 (235 4871).

Where Street Liverpool 168 26W

We have moved to **VICTORIA**

Central Computing Consultants

8 Lower Grosvenor Place, London SW1 Telex 27950 Ref. 1035

Telephone **01~834 7105**

AMSTERDAM

INTERACTIVE GRAPHICS/MECHANICAL ENGINEERING **DESIGN AND MANUFACTURING**

者,正是是自由的企业的工作的基础的是自由的企业上的企业和工程的。但如

The European Marketing Center of the leeding International Company in COMPUTER GRAPHICS, heve a raquirement for an Applicationa Consultant and Graphics Softwere Specialist.

Candidetes wifl be required (given the necessary training) to provide consultency services on etete of the ert Graphics Systems and Applicatione, to a wide range of industries. In eddition the successfuf candidates will be reponsible for evaluation end reporting on epplication systems and softwere.

Candidetes prepared to travel, will be offered high seleries plus a very lucretive profit shering scheme end exciting long term cereer opportunities.

IRELAND ...

Service Engineers

to £7,000 basic

The Engineer Division of ons of Ireland's most progressive companies is seeking additional personnel to service its rapidly expanding engineer base.

Engineers must have a minimum of 18 months' trouble-shooting computer eyetems (central processing disc and tape units and various electro machanical devices) down to component level, are required for the company's Dublin office, although a certain amount of travel eround the country will be necessary.

Basic salary will depend on expanience, but will be very competitive and a complete package includes sither a company car or allowance, full expanses and overtime paymente, in addition the company offers en attractive relocation schems.

For further deteile telephone Ilm Corrigen on Dublin (0001) 789 577 or write to CCC at Cranmore, 65 Glen Roed, Belfest 8T11 88D. CW 16/3

ordan programme de managrante de controlación de controlación de controlación de controlación de controlación d

WORK LOCALLY IN EALING & EARN £6,500 p.a.

The opportunity has arisen to join the expension program of our cliente installation located in Ealing. Two ANALYST/PROGRAMMERS with knowledge of ICL 1900 or 2903/4 hardwere end softwere, ere required to essist this company in its computerisation growth.

The immediete future involves mejor enhancements to both hardwere end systems, including the installation of intelfigent terminels at regional locations.

RPG II progremming experience would be welcomed, but the successful cendidates will be given full treining in this skill where required.

In a nutshell, candidates living in or wishing to move to the Eeling aree will banefit from job satisfection end cereer growth with this expanding compeny, es well es e starting safery of up to £6500.

CUSTOMER SUPPORT CONSULTANTS

A CALL TO THE CONTROL OF THE CONTROL

£6,000 - £7,000 + Car

Our clients ere Worldwide market leaders in interactive computing services who have been established to over ten years can boast an annuel growth rate of over 30% during the last nine years. They have vecencies in many of their offices throughout the UK for CUSTOMER SUPPORT CONSULTANTS to help mainteln this success over the next ten years.

The successful candidates will be required to provide Technical Support to existing clients; and Pre-Sales Technical Support for Salesmen, covering a wide range of applications ereas and Business functions. We would like to hear from people in the 25-35 age bracket preferably with a degree or equivalent who have had some OP experience and a knowledge of one riigh Lavel language preferably FORTRAN but this is not essential.

This position will eppeal to those people who feel that their present position does not give them the chellange or satisfaction they deserve.

A lot of time and money will be invested in treining you for this position end in developing your career thereafter. Coupled with a policy of promotion from within, this appointment offers excellent career. nunitles for those who ere successful,

SENIOR SYSTEMS ANALYST

£7,000 + BENEFITS **REVIEW IN JUNE**

Our clients who ere e mejor commercial organisation ere expanding and diversifying their lerge and secure merket bese, and therefore require an additional SENIOR SYSTEMS ANALYST to lead projects within a young professional

The successful candidate will be working with the latest Herdwere (ICL) end will elready heve experience of Systems Analysis preferably in a Commercial environment such es Financiel, Stock Control end Order Processing systems.

This position will appeal to people who wish to take the wider responsibilities towards Business Anelysis.

CW 16/2

WILTSHIRE

PROGRAMMERS & ANALYSTS

Middlesex/Hertfordshire

A Date Processing Department is the backbone of any successful company, especially if the company is a Multi-Million Pound Manufacturing Organisation with a turnover in excess of £1,000 million.

That is why we would like to hear from PROGRAMMERS and ANALYSTS who can become members of the team for the development of new Commorcial applications.

The installation presently runs duel 1900's under G2+, but owing to the centinual demand from users, one of the 1900's is shortly to be upgreded, probably by a 2980.

Programmers will need at leest 1B months' experience of Cobol. Knowledge ni G2+ and Ostadrive would be an added advantege. Analysts will need a Programming background with 16 months' Analysis experience, eithough Programmere who wish to advance their carear into Anniysis will also be

The Company can offer an excellent career poth through to Management, plus the usual benefits at a large company which includes Statt Shop, Sub canteen, Sports Club, Life Assurance and 4 weeks holiday per year.

Andre and the contract of the

Cork

CONTROL OF THE PROPERTY OF THE SENIOR ANALYST PROGRAMMER

£7,500 p.a.

+ relocation 8xps.

A well-actebished frish company wichus to uppnint a Computer Profussional to take charge of their new

The job requires someone to monitor current applications, i.e., ON-LINE CROER ENTRY, STOCK CONTROL, etc., develop new and luture systems and doy-to-tiny running ni the department.

- ★ 3 years in depth COBOL programming
 ★ 2 years ON-LINE SYSTEMS DESIGN
- * Analysts and implementation experience
 * Ability to menage a growing department

A rewarding carser ewaits the successful candidate with great future ecope. An ettractive salery is coupled with the type of excellent frings benefits only associated with a major manufacturing samples.

For turther detalle telephone Gerald Celamere on Oublin (0001) 789 577 or write to CCC at Cremmere, 65 Glen Road, Ballast BT11 880.

SPRECHEN-SIE DEUTSCH

Mini/Software

up to £1.7,500

One of the most prestigious softwere companies in Europe is currently expanding thair German operations in Central Germany. Their business is based on a wide range of projects currently being developed on both Minis and Business Machines.

Due to this axpansion they went to meet savarel Computar Professionals who are competant in Germen, for project development. Tachnicel background and be widespread but must include software development on minis, e.g. Spinish 330. DEC PDPII, DG Nova Auto.

While our client can accommodate people seaking employment for a year of two they definitely want candidates with medium to long-term ideas about setuing in Europe and building a future with the Company.

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

ANALYSTS & PROGRAMMERS

The FOCUS is on ESSEX - NOW!!

We are currently working on bahalf of a selectad number of prime clients in the Essax area, who are looking for experienced Analysts and Programmers.

SALARIES — above average

★ Senior Systems Analyst

∙ to £8½K

* Systems Analyst

c.£7K

* Programmers, Cobol, RPGII or PL1

CAREER PROSPECTS — excellent

Suite 201/6, Albany House, 324 Regent Street, London W1R 5AA. 01-637 9611

For an immediate interview before it's too late contact me today - Val Bowen

THE BIG OUESTION

- Do you have expertise in MACRO. CORAL. FORTRAN, or ASSEMBLER
- Have you any experience of Real Time Systems
- Are you or could you be a Systems Designer, or Systems Engineer, or Programmer on minis and micros
- Have you a computing or electronic degree
- Are you worth between £4K and £7½K
- Do you want to live in a rural area of England

If you score more YES than NO contact Derek Pearson to evaluate your future

MANAGEMENT & EXECUTIVE SELECTION

SOFTWARE PROJECT LEADER-HONG KONG

£28,400 inc.

+£10,500 Contract Bonus 1½ yr. contract

Our Client requires a Project Leader who will work with a dedicated mini-computer system using DEC PDP11 series. Some knowledge of this equipment is essential, en in-depth knowledge a definite advantage.

Applicants should have a minimum of eight years experience in Software design and writing and be able to provide a proven record of managing the successful implementation of complex systems.

Benefits Include:

1B months accompanied contract 2 months paid leave on completion £10,500 contract bonus Return airfare including family Settling in costs.

Applications, including a full C.V., and quoting reference J41 will be sent direct to our client. Please send a covering letter eddressed to the Security Maneger listing any companies to whom your application should not be passed

40 Berkeley Square London WIX 6AD 01-528 9488



SCHOOL OF ELECTRONIC SYSTEM DESIGN Approved MAPCON consultants

Microprocessors and their on-line application Short Course Mey 21st-25th Inclusive

miley 2 1.51-25th inclusive amphasish; and comprehensly notes are provided. Write for a brothus and application form to The Short Charge Office, Gran-field inclusive of Technology, Bedford, MK45 and Technology, Bedford, MK45 and 123-256111 Spt. 534-4

PROGRAMMERS & OPERATORS FREE LIST ALL AREAS The heat CHOICE of Computer Approvisionants



SYSTEMS SOFT-WARE ENGINEER? Me fleet you to an interest of the fleet of

Professional & Executive Recruitment



You'll need at least a year's experience of programming in Assemblar or any low level language and should be worked on micro or mini-computer systems. Depending on exactly how much experience you do have we'll offer you e'salery between £4.500 and £8.500. We're based in the pleasant market town of Cirencestar, and it you have to move we'll help

So why not contact: Mike Hopper, PER Gloucester, Grosvenor House, Station Road, Gloucester. Telephone: 0452 35625.

And we need people like you to help make the most of our plene for the future."

ROGRAMMERS

OGRAMMERS

We're the country's leeding manufacturer of fare collection systems and have a world-wide reputation to keep up.

So we're not resting on our laurals.

ticket system we've just developed.

COMPUTER PERSONNEL APPOINTMENTS 17D.

Cât set: Specialists said Consultants: Jor

D.P. MANAGERS, SYSTEMS ANALYSTS,

PROGRAMMERS AND

OPERATORS

OO initialists. Nor Itelan Countles said Scotles of Society in Consultants apply to:

Of New Street, Birmingham, 82 4DU,021-643 0851

Or Tel. 01/328/7351

MYRIADI

RELOCATE TO THE OIL FIELDS OF KENT

ASSEMBLER PROGRAMMER

LARGE COMMERCIAL PROJECT

KENT

TO £6500

This is an Ideal opportunity for an Assembler Programmer to gain complete project involvement working in a small team responsible for enhancing and maintaining data processing facilities for an important area of our client's organisation.

Based in one of the most pleasant areas of rural Kent the data centre housea some of the moat advanced IBM hardware together with communications equipment which links sites throughout Great Britain and Europe.

in addition to a very competitive salary the organiaation is able to offer a comprehensive benefits package which includes penalon and sickness scheme and flexible hours. For those wishing to move to the area there is a very generous relocation package giving 100% expenses.

Telephone now for more detailed information regarding this position and the excellent career prospects offered.

Ref. SE1/1904

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consulianis Telephone or write to:-30 Fleet Street London EC4Y IAA 01-353 0981 (24 hrs)

Applications & Systems Programmers



We're on the up and up - are you?

PL1 Applications Programmers Responsible for maintaining and developing suites of computer programs using online program development

facilities.
PL1 Programmers with either DOS or OS experience should apply. We would consider training you in PL1 if you have experience of DOS/VS, DL1, CICS/VS or DBOMP.

DOS/VS Systems Programmers

We are looking for Systems Programmers to become responsible for a number of functions. These could include installation software maintenance; hardware evaluation; advising colicagues on new machine andware; interfacing with other Rolls-Royce sites.

Two years experience of IBM DOS/VS systems software and assembler programming is mondatory.

Experience of CiCS/VS, DL/I an added advantage.

The Installation: IBM 370/138 IMb, POWER/VS, CICS/VS, DL/I, PANVALET, DBOMP.



Rolls-Royce has had a record sales year with deals signed in 1978 that could be ultimately worth more than £2,000 million. Here at Rolls-Royce Aero Division we are engaged in the design and manufacture of a range of gas Iurbines for hovercraft, light aircraft and helicopters, both civil and military, including a major order programme for Westland Helicopters. For the computer specialist the inspact of our recent successes is more subtle. If clearly requires a much increased emphasis on computer barer, design and control information systems in order to mount the highly complex design and manufacturing programmes needed. But less obviously if also cres les. that all important buoyant climate where new thirking. and projects can thrive in a well motivated atmosphere.

*The Benefits

Highly competitive atarting salaries Annual individual performance award sys.em Quarterly productivity bonus Excellent sports and social facilities

Please apply with brief career detalls or telephone for an application form, quoting reference CW/67 to: Peter Banton, Rolls-Royce Limited, Aero Division, Leavesdan, Watford WD2 7BZ. Tel; Garston 70/35,

CAMDEN'S GROWING GET IN NOW

Chief Executive's Department

We have on exciting new development programme and are recrniting extra stall for our 1902T installation. Fourth generation equipment is being avaluated at this member when my order is placed, full training will be given to all stall A

SYSTEMS ANALYST

A minimum of 18 munths' exparience is required in systems malysis, irr a communical environment. Analysis will provide support and masistance Project Leaders who are respectible for a team of up to suvon analysis and programmers. Dutiet will include systems analysis onli dasign, producing documentation to formalised standents. Salary on a scale up to £6485 pt. (incl.) Ref. No. 1C / 56.

SENIOR PROGRAMMER

A minimum of 2 years programming in COSOL or PAR.
On-line MAXIMOP / DRIVER nit edventage. Dutles will include witing program specifications. Solary on a scale up to £6003 p.s. (Incl.) Rel. No. IC / 57.

PROGRAMMER - Career Grade

A minimum of one year's programming. Safaty on a grade up to £5508 p.a. (incl.) dopending on experience and shifty. Fel

We are a friendly must, working on widely varied applications located of just about the ensiest travel spot in London – King's Cross. All the generous bounders must security usually associated with local government employment including sessentickettes scheme, liaxitime, etc.

For epplication form please telephone our 24-hour recruitment answering sorvice 01-837 9988 or seet postcard to the Chief Executive, London Borough et Camden, Town Hall, Euston Road, London NW1 284, stating post and appropriate reference number.

cemden-an equal opportunity employer



Applicates our consistered on the basis of their sandity for the post regarders of the race & march states
Alue registered do that posses with the

The Unbluggraphy, Governs Oivision of the Betish

Operations Manager

(Senior Executive Officer level) The Bibliographic Survices Division currently provides turgu scale untiline and butch services to its users, both from within the United Kingulom and also on an increasing scale or Europa. The processing resource for those survices is provided primarily from an BM 370 burgan at Hurhrw, but healt current and future burean at further, but healt current and future disvolopment work is concentrated on the large ICL 2900 maps, luminar services for this boing based on a 2900 at Brucknoll, he order to control those satisfies on ICL 290X is currently being leatelled at the Division control it forwher with links in both sites. The routies of the computer Manager include the day to day running of the computer installistion (covering operations and data recurrently, leising extensively with person and co-ordinations with both computer and COM: operations and units controll, height extensively will use and co-ordinating with both computer and cold to the control to the cold to the col

Dumonx.

Applicants should have had experience of supervision in an operational environment in addition to separate in operating ICL 2903 and 1900 aquipment. Previous experience of IBM 370 Operating Systems and the training of date control and operations staff would be adventageous.

advantageous. Saisry Scola £6.491-£7558, Including Inner Landon

Weighting.
For an application form, which should be returned by May 3, 1979, please contact Mrs. L. Archer, The British Librery, Personnal Section, Sharatan House, Greet Chapel Street, Lendon, W1. Telephone: 836



The British Library

LONDON BOROUGH OF BRENT WILLESDEN COLLEGE OF TECHNOLO Principal: A. K. Barnerd, BSq. PhD, CCheff, C.

Department of Science Required from September 1st.

LECTURER

to teach COMPUTER SCIENCE together with a TICS mainly to GCE A level and C & G 746 and Osta Processing experience is essential.

TICS mainly to GCE A-level and C Data Processing experience is essential. Data Processing experience is essential. Salary Scale; £3,888 to £5,808 included Salary Scale; £3,888 to £5,808 included Application forms. (SAE) may be obtained from the Application forms. (SAE) may be obtained from the Application forms. (SAE) may be obtained from the Application forms. (SAE) may be obtained by the Children of Colors of C

TRAINING MANAGER

c. £8,000 **WEST LONDON**

If your background is in lecturing or training, and you feel ready to meet the challenge of reorganising our Client's training Department in software, sales and administration, then we would like to hear from you.

Commercial software experience would be particularly useful as would experience of running a training department.

You'll join a leading mini computer manufacturer and will have ample scope to prove yourself in this demanding position.

For further details please contact MARK IRENS quoting reference CW/349/1.

HUMON EXECUTIVE SELECTION 1TO, HUMON HOUSE, HUMON STREET, LONGON EC4Y EHP.

SCOTLAND

SALES EXECUTIVE

Leading Mini Computer Manufacturer Commercial Systems

Basic Salary £7,000 p.a. + negotiable guarantee + Company Car

This a rare opportunity to join Our Cliants, a leading Mini Computer manufacturer to manage a sales territory in Scotland.

We welcome applications from established Sales Executives from the Computer industry who can readily identify with this growth area and have proven track records or successful sales against quota. Interviews will be held in Scotland but interested applicants should contact, in the first instance BOB BOWER, the Advising Director for further information.

Ref: CW349/2

HERTS, BERKS, WILTS. DORSET SALES EXECUTIVES

Quota £13,000 p.a. Realistic first year's gunrantce Pius Company Car

Distributed Data Processing and Communications

Our Clients are a leading manufacturer of Distributed Data Processing and Communications equipment and enjoy an excellent reputation in the market place. They are looking for a Sales Executive to manage the above territories and ideally, be resident in an area where he has easy access to the whole territory.

This is a superb appartunity for samoone who can readily identify with an autonomous operation and has a proven track record in selling related equipment against a pre-defined quoto.

Pleuse telephone BOD 80WER, the Advising Director for Further information and to arrange u mutually convenient meeting.

Ref: CW341/3

MADRID

APPLICATIONS

Real Time Distributed Network System

CONSULTANTS / SPECIALISTS

Duration: 2 years +

Remuneration: £8,000 to £13,000

plus U.K. Mortgage and Rate Subsidy

Our Client, an internationally respected systems organisation, requires Applications Consultants/Specialists who have demonstrable and sound knowledge and experience os a teom or project leader with any of the following applications:

- TRANSPORTATION DISTRIBUTION WAREHOUSING PURCHASING ACCOUNTING PERSONNEL
- EQUIPMENT, FLEET or PLANT MAINTENANCE.
- SALES ORDER ENTRY AND PROCESSING
- FLEET DELIVERY SCHEDULING FACILITIES AND MATERIALS CONTROL STOCK RECORDING AND CONTROL

Applicants should have nt least 4 to 6 years' systems or programraing experience (preferably with small computers and t'OBOL) combined with the ubitity to effectively communicate their knowledge and skills to the lucul development trams. Spanish language addity is not essential however you will be required to read some Spanish in the course of the work, it is desirable for all applicants to have had some foreign thaty/assignment experience.

This is an opportunity to help develop one of the most advanced distributed network systems, and just think what that will do for your career when you return to the U.K.

For further details and an immediate interview, contact JIM FORT

Ref: CW34974

THE OPEN UNIVERSITY DATA PROCESSING DIVISION

COMPUTER OPERATOR

(including an allowance for three shift working)

s University's rapidly expending Data Centra provides support to the administrative and operational units of the University which now has approximately 70,000 home-based students. Promotions have created a vacancy for a UNIVAC 1100 Operator and applications are invited from persons over the age of 18, squeeted to 'O' level stondard and who have up to one year's experience of major operating systems.

We offer: Carear development opportunities; Training, including day release for computer studies; Good holiday provision — 4 weeks plus one waok at Easter and Christmas; Spon/social facilities; Rural location with houses available to mi or to purchase at reasonable prices.

Application forms are socilable from The Recruitment Office (J0868/1), The Open University, P.O. Box 75, Welton Hell, Milton Keynes, MK7 SAL or telephone Milton Keynes 63404: there is a 24-hour enewaring service on 81888

Closing date for applications: 4th May.

ANALYST PROGRAMMER

(Ref. T.87)

AP3/5 £3,912-£5,254 inclusive

this post offers an opportunity to participate in the dave-opment of the full potential of an ICL 2903 Coreputer and sho will be of interest to an RPQ II programmer wishing to gain analysis experience.

sha will be of interars to an RRQ II programment gain analysis experience.

The Computer Section is focused in the Council Oilices, High Street, Dartlord, within seasy reach of A2/M2 and Oartlord A generous disjurpance/raiocation scheme is in Operation Possible sesistance with housing, Further details and application form, raturnable personnel Section, Manor House, Swansonnel Kent, Tel. Grasnhithe (0322) 452431

Commence of the second supplemental second second second SYSTEMS ANALYSTS

Prestwich, Manchester

£4,959-£6,025

To work on a wids varisty of systems, both batch and on-line.

hs present instellation consists of en ICL 1904S with terminals situated et remote locations. Work is stready in progress in developing systems for small computers and reflects the positive ettitude of the authority to new comcapts and techniques. Future plans include the ecquisition of a large 2900 computer in mid-1979.

Experience in or knowledge of Communications, N.C.C. Documentation, Standards, George II Operating Systems and Programming fundamentals will be edventageous. The ability to communicate with multi-disciplinary users is

Starting selery will be commensurate with experience in the renge £4,959-

The Computer Centre, which affords a pleasant working environment in new premises, is within easy access of the M $\beta\,2$ motorwey (Exit 17) and convenient for local bus end train services.

Excellent condition include staff restaurants, recreational facilities, sports and social club, a free car perk, a choice of starting times and in certain cases assistance with removal expansas. Leave sntitlement consists of 20 days plus the normal statutory and other

concessionary holidays. Application forms and job description, etc., may be obtained from the Regional Administrator. North Western Regional Hashin Authority, Gateway House, Piccadilly South, Manchester M80 71P, telephone number 081-236-9456 Ext. 425. Closing date 19th May 1979; Please quote reference number 1787A.

North Western # Prestwich, Manchester Regional Health Authority COMPUTER CENTRE

DATA TERMINAL OPERATOR - GREENWICH

DATA TERMINAL OPERATOR — ISH EERSWICH

Standard Jasephones and Cattles Lighted have a function opportunity for an intelligent many or whomen.

Standard Jasephones and Cattles Lighted have a function opportunity for an intelligent many or whomen.

Standard Jasephones and Cattles Individual analysis of the cattle opportunity of the control of the control of the cattle of the catt

New ICL 2970 Installation-**Operations**

Applications are invited for experienced operations stall to join the Computer Services Owners which is currently installing a 2 magabyte ICL 2970 using VME / 8.

Support Officer

Ref. CW/8/9196. Up to £4,581

Applicants should be experienced Serino Operators with at least three years' experience on large ICL maintrems equipment, prelarably 2800 range. The successful cendidate will demonstrate that they have the necessary operators and technical skills required for the past end will be employed on a non-shift basis as a member of a small team responsible for providing a Central operating support service to the installation and its users Responsibilities involve the sering up and control of all new systems from lines stages of development to live processing, the preparation of operating procedures and customer liaison functions.

Senior Operator/ Controller

Ref. CW/8/9197, Up to £5,130 inci Shift Allowance

Candidates should be experienced Operators of Senior Operators with at loss these years' asperence on large multi-programming maintrame equipment, preferably with some supervisory responsibilities: Duties will include operating and postrol functions, working to pro-determined schedules. Such diagnostics, listion with engineering and sear stall and the training of studypersonnel. A 2-shift system will be importanted.

if you are an ambitious person curiontly, locating for eareer advancement in a clustenging and propriessing distallation, alephone 01-701 2870 any unselfor all application form, or

The Personnial Officer, Landon Sciences of Southwark 127 Perkinent Road, Landon SSS SUB quoting the above reference and job title: Closing citie 4.5.78

Jouthwark.

Is your computing career

at a standstill?

Co-op Bank offer you six

good reasons for a change -

* Stimulating and involving work with 'tomorrows' systems

* Attractive salaries

* Excellent career development opportunities

*-Re-location assistance

* Low-interest mortgages

* Full scale technical training and education in IPT techniques.

BLACKBURN





U.K. Re-Insurance Group City of London

Salarles: £6.5K-£9.5K +

Merchant Banking Group with a recently acquired U.S. subsidiary with extensive and soon to be upgraded computing hardware requires additional D.P. personnel up to Project Manager level. Ideally you must offer a programming background in PL I under OS or MVS and will either have on line expertise or a desire to move into this area or Data-Base design through participation in our client's training programmes. Of particular importance is the

A leading Ctty of London based Re-insurance and ability to work as a member of a Specialist Project team under strict documentation and programming standards. A second language — ASSEMBLER/COBOL — would in addition be of considerable advantage. Our client in addition to an excellent salary offer a reduced rate mortgage, private health and non-contributory pension schemes plus rest-aurant facilities. Interviews will be held on the company's premises in early May.

Systems Engineers Belgium

Salaries up to £15K

An internationally renowned supplier of Data Base and Teleprocessing Management Systems has requested Logistix to identify top calibre D.B. or T.P. Systems Engineers, Technically epeaking you must have current experience in the implementation and support of Dala-Base and/or Real-Time systems. Sultable applicants should offer iMS DB/DC exposure although due consideration will be given to those having exiensive knowledge of an independent suppliers' software. You could presently be engaged in the areas of budgeting/forecasting, foreign exchange/investment or the presentation of products to both, English and French speaking executives

within a seminar environment. Consequently whilst fluency in French is not a pre-requisite (since language courses can be provided at the company's expense) a certain knowledge of the language is desirable. The higher than average salaries (even for Beiglum) reflect the prominence which our client places in the acquisition of these key personnel. Excellent benefits include full relocation expenses, life and disability insurance, pension/medical plans end a housing allowance. We will conduct first interviews after which candidates will spend a day with the company before offers are made.

Applications Support Experts Netherlands

of expertise are: (a) Quality Assurance. (b) Advising development departments of software usability. (c) Preand post sales support. (d) Problems olving on site and in-house. (e) Release preparation and (f) Evaluation of new products and techniques, in addition to above average salaries, our client will pay

If you wish to relocate immediately to a permanent based career position in the Netherlands please read on... You should offer considerable expertise in two or more of the areas outlined below. The required areas ianguage courses for the employee and his partner. Of course, a pension plan and a health insurance scheme form an inlegral pari of the package. There are real opportunities for transfer worldwide throughout the company's organisation.

Interdata Programmers **West Germany**

Salarles: to £15K

An international client with a long track record of successfully implementing new systems for European Public Institutions and Government Agencies is seeking several iNTERDATA orientated Programmers for a long standing German project. They now require additional personnel to cope with the installation of new hardware and extended applications areas. You will become a member of one several specialist project teams in which you will make a valuable contribution whilst simultaneously expanding your own technological frontiers. We a

specifically requested to recruit only FC RTRAN and Assembler Programmers who are fully familiar with interdata 8/32 hardware. You should therefore offer two years or more programming experience on this machine. The applications areas in which you will be involved comprise mathematical modelling, teating, data communications and verification. On completion of the project you will be given every opportunity to relocate to one of the company's other European offices.

Camac Programmers Copenhagen or Holland

Salaries: to £15K

Scandinavia's leading Systems House and Software relocate immediately to one of our client's European Consultancy seeks several Programmers with current expertise of software development and design on micro processors, preferably Intel 8085/6, Zilog Z80 and Motorola 6800. You will be required to Advisers immediately,

offices. It is anticipated that employment will commence in either May or June. For further Information telephone one of our Recruitment

Logistix, Freepost 32, London WIE 3YZ

London WIN 9HA

01-491 4636

Licence No. SE (A)2887

[6]57] Telex: 28800

Licenced by D.O.E.

SYSTEMS PROGRAMMERS COMMUNICATIONS DEVELOPMENT

£6,500-£8,500

SIA provides a nationwide technical computing sarvice based on linked CDC Cyber 175 and 6600 mainframes backed up by a strong consulting team. Currently over 200 betch and teletype terminals are supported through Modcomp frontend

The operating systems for both the CDC machines end the Modcomp mini-computers are developed and supported by SIA's System Development Team which is located at the company's headquarters in Victoria. There is an on-going programme of system development and important naw projects are scheduled for the immediate future, particularly the support of new network communications protocols and European

If you are a systems programmer with experiance in telecommunications, mini-computers or CDC operating systems and would like to know more about the opportunities offered by a career at SIA, please write or telephone:

MISS SUE KEMP, SIA LIMITED 23 LOWER BELGRAVE STREET **LONDON SW1W ONW** 01-730 4544

OPERATORS up to £6,000

Mainframe experience? **Used to on-line pressure? READ ON**

Wa are based in W1 and run 4 duol processor 448K word DEC SYSTEM 10'S - part of the largest integrated Dec Instellation in the world, consisting of 24 DEC SYSTEM 10'S on a network of over 100 PDP B'S and it's spread throughout the U.K.-Europe -U.S.A.

YOU'VE GOT THIS FAR READ ON

- Incomo up to £6,000
- 24 hour medical coveraga
- · guaranteed two weekands off
- oparations

- proven upward caraer in
- generous sickness and holiday contributory pansion scheme (5% emp. 7% co.)
- continental 24 hour shift system opportunities to move into other departmenta

Giva us a ring Tony Harris or Peter Pearce on 01-637 1355 or write (including your job history) to: Peter Clements, ADP Network Services Ltd., 179-193 Great Portland Street, London WIN 5TB.

UNIVERSITY COLLEGE CARDIFF

one are invited from

SYSTEMS PROGRAMMER

In the COMPUTING CENTRE, to essist in the maintenance of the systems software on the current ICL 4-70 computer and the eveluation and introduction of a mplecament machine scheduled for 1980/81. White previous System 4 seperations is desirable, particular importance will be strached to on applicant's breadth of esperience.

Appointment will be made on the Other National Gracks 1A E3893-E989 p.e. on 18 E3893-E989 p.e. on 18 E3893-E989 p.e. on 18 E3894-E8804 (under review) according to ade, qualifications and experience. Duties in commerce 1 at util, 1979, or se, book as possible: densities.

denotes:

Applications (two copies), applications (two copies), applications (two copies), applications and addresses of two states, about he journeded to the Wesperinoise (Applining Heim) and financiary. University College, P. O. Bon 78, Carolli Cpl. 1 KL. (tons whom burker probables may be obtained Globing data. 14 in May, 1879, Asteropol. 787.

UNIVERSITY OF SURREY COMPUTING UNIT

APPLICATIONS PROGRAMMER

The University are installing a lerge multi-social system during the summer and applications are invited for the post of Applications Programmer Within the Computed Unit.

The successful cendidate will be expected to will be included to will be development of software for the new eyestern.

The selery will be on the scale £3883 cents.

Further perticulars can be obtained for the State College, University of Surrey, GUILDEORD State State of State of Surrey, GUILDEORD State of Surrey, GUILDEORD Applications in the form of source of the state of th

MYRIAD

ANALYST/ **PROGRAMMER**

IN LINE FOR SYSTEM 38

W. LONDON

TO £8000

An attractive opportunity has now arisen for an additional analyst/programmer to join our client who is currently planning for the introduction of an IBM System 38 Into the installation.

The person appointed can took forward to developing systems with a high degree of self-motivation, from feasibility through to implementation. On-tine systems are of great importance and present development plans include an extension of these facilities.

The successful applicant will be able to offer a sound RPGII/CCP commercial programming background, preferably obtained in an IBM System 3/15D environment, coupled with the ability to work with new techniques and make a strong contribution to the

Our client is 8 very successful manufacturing and marketing company in a major international group. In addition to a competitive starting salary they offer a subsidised canteen facility and a highly favourable discount on company products as part of a comprehensive benefits package.

Ref. NW1/1904

MYRIAD APPOINTMENTS LIMITED 30 Fleet Street London EC4Y IAA

01-353 0981 (24 HOURS)

SENIOR COMPUTER

OFFICER I/II

The second appointment is for support of the University's administrative applications, in analysis and implementation of new systems and in review and conversion of susting systems. Applicants should have a minimum of thiss years of superione in system development work its a university or similar organization. Preference will be given to persona with superione in on-line applications.

As current rates, salaries tax with re-exceed 15% of gross income. Housin at a rental of 74% of salary, educatio allowances, long leave and madic benefits era provided.

Applications as invited for two posts of Senior Computer Officer [/1] in the University Computer Centre One of the appointmens is in the else of scademic tear services. The successful cendidate is to organize and develop use services on all the Centre's computer iscillates and to provide consultancy and support to academic steff members and suddents. Applicants should have as-tensive prior september of user services in a university or other education? research inguistion. FINTERNATIONAL LIMITED SYSTEMS ANALYSTS & PROGRAMMERS

Continuing our period of planned expansion we would be pleased to meet Systeme Analysis and Programmers with a minimum of 4 years' experience interested in either pan-time home based or full-time opportunities within one of the country's leading systems houses.

Come and meet us for an informal discussion on Tuesday, 24th

April, at: (believen 1800 and 2100 hours)

Emerson Olstrict Five

Weshington TYNE AND WEAR Victoria Hotel

Milton Street NOTTINGHAM Aytoun Street

ween 1700 and 2100 hours)

you are unable to come along then or ere interested in opportunities in other parts of the country please contact the Personnel Meneger, Finternetional Limited, The Sury, Church Street, Cheshem, Buckinghemehire HP5 1LB [Tel. Cheshem (0240)5140 Dt. Pleese quote Rel. No. OE/14

SOUTHERN SUNSHINE!

808 WILLIAMS KNOWS THE SOUTHERN MARKET and can be relied upon to a range relevant and interesting interviews. Telephone today an early interview.

O D Minigran Crit. Parsantel

2. Jungsale Guiteford Surrey

GUIL DE ORD. (0483): 68668

E7,500 + E7,250 00 e £7,250 o £5,500 o £7,500 £6,500 + Buekl o £7,000 +

Bysieme Consultant (Bureau)
As/Preg. (Cobol/APB 10)
Systems Analysi (BM 34 (Gn-Line)
As/Prog. (Misnulacturer) Cobol
Sesier Programmer (Bureau)
Prog/Assiyata
Sysiems Programmer

QUEEN MARY COLLEGE ELECTRICAL AND ELECTRONI ORGINEERING DEPARTMENT

Secretary (Hecroniment). Hong Kong, Hong Kong.

May, 1979.

2 LECTURESHIPS in this Department which her divisions for Teleponymunications, Electronic / Digital Systems and Department Power and Control.

It to be in charge of the high-rotted and high-power biboverings, prejumbly with formal continues of the high-rotted

with industrial and question in standard with industrial and question in the network of the netw

Author Goods serious non-line field interest (CVI). Open heary cologie, following the field (CVI). Deem heary cologie, following the field (CVII). E. L. M.S. is written application inputs be insign just after them. If the

experienced and embitious men and women to work with the major I2M 3031 meinframes, dovoloping our new nationwide network, based on 3600 series terminal systems Senior Systems Analysts-up to £6,696to rindertake major enelyers and design work rolated to the new systems. You should how a rimber of years experience of enalysing and designing applications for IBM 370/3030 systems. PRESTON

We shall be using DL1 detabase and CICS. We see here an

oxcollent apportunity for programmers and analysis to broaden their scope within a last growing tranking

Systems Analysts—up to £5,676—

At our new purpose-built computer complex we nearl

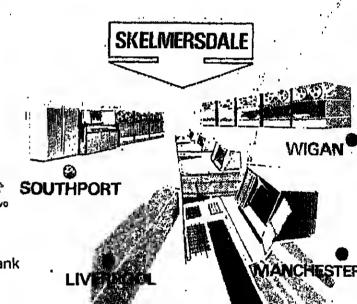
Senior Programmers—up to £5,335 who have several years expendings - punferably of IAM installations using both COBOL and ASSEMALER.

On new complex is located at Skelmorsdale in the heart of Lancashire, Recisionably piced and attractive housing is readily evaluable, ultering the broudful Lancashire coast or the initial areas morth of Manchester and Liverpool as new places to suttle down The molecular first and nationwish rational forms and two The mightoning lowns and two major other offer enfortamental of small a variety as to please all tastes

Starting salaries will be based upon age and exponence and wo offer the full range of handing benefits For further intermation about our utnorand yours in advanced computational translang, please write with full details to R.J. Gorvin.

Personnel Manager, Co-operative Bank Lenited, P.D. Box 101, New femory transp. Marchiester Med 4L16 P.S. If you are interested but your qualifications or experience (to not quite match, we would still be interested in hearing from you, as we also have arancies below these senior levels.

The Co-operative Bank



City of Nottingham

The City Council here an ICL 1803A computer which is to be replaced by an ICL 2860/2M& in October 1979 to allow a substantial expansion of services over the next few years. DME will be used at first and VME/B introduced by stages. An allow phonon development service is to be provided. The

following vacancies are to be filled. SENIOR PROGRAMMER 801/2 55,232-58.080 per annum including supple

Applicant should prelately here at least 3 years' experience of programming in PLAN and COBOL and be capable of teading a small team of programmers in development, conversion and maintenance projects. Relevant qualifications will be an edvantage.

will be used in the condition of the provided. The stiff establishment has been reorganised and enlarged and the

PROGRAMMERS.

C.1 APR 61,856-25 073 per annum including supplement

C.1.APB 61,856-£5.073 per ennum including supplement.
Applicants should preferably have at least 1 year's expanence in PLAN or COBOL. The starting salary will depend on ega-expanence and qualifications.

Assistance with flowing accommodation and payment of hydroval expenses, lodging ellowances or travelling aliquismost appropriate training for 2000 will be served posts. Appropriate training for 2000 will be served by the names and addresses of two referees that the fortunided to the City freesurar, Quildhall, Matchigham 1801 2DE, by 6th Many, 1875. Please quipts 195 C1/1830/2.

_____ **OPERATORS** to £5000

ICL 1900

UNIVAC Installation in W. London is tooking for an Operator 1108 exp. Prospects of travel for right person. HONEYWELL £4000

Compeny in Easex ese looking for an operator with 9 mine Control of the Control o

Operators with some exp. in GCOS ere required for this eits in N London.

Are you a S/Ledder with 3 yrs. supervisory oxp. and feel you have senter menagement potential? Then this loading company in Central London is for you.

A yes, experience rand, pain 1 yr. ea e S/Leader fore elegin Central Lander et al. Contral Lander et al. Contr

Midde & Control London

IBM DOS
Senior Operators with 2 for exp. required by 2. Componies in Equitoration with 2 for exp. required by 2. Componies in Equitoration 3 to mortgages is unity part of the total package available.

IBM DOS
Minimum rol 8 miths 1 king regio. by this Edinpany in C. London Escalight polygor of papers parting 14 ping in refing.

BEING TO RELIGIOUS TO SERVICE 3 LIVERPOOL STREET 01-283 2751 -

THE SALES AND MARKETING BIT

TERRITORY MANAGEMENT-1

The Journey **Planning System**

people manage to keep their

dlaries full at least one week

lime tends to generate less

"busy signals" and is more likely to avoid the pressure

of "squeczed-in" appoint-

One good discipline when

ealls a week, is to arninge

the first and last uppoint

those in the middle

ment for each day before

Another factor to consi

ministrative function of

appointment making, Most

salesmen leave this task for

Monday mornings and

Friday afternoons, If that is

the case, maybe those times

for actually making calls

and the middle of the week

better for administrative

PRODUCT

NOTES

Digital

TRADER

touch with the people sup-porting him is likely to be

how she mokes cuniact with salesmen whenever urgent situations arise. Her answer is almost sure to be

Itini that rapid communica-tion with the salesman is achievable at nil times if the intmediate reaction that problems and opportunities isually demand, is to be put

reptitionally creeping from one clandestine meeting to another, as if they were peddling beroin rather than selling data processing proto collect their expenses and attend the mouthly Mafia

tem is simply a device which helps the salesman to construct a logical sequence of sales calls for the week(s) ahead and takes Into occount such factors as geography, call frequency client category, and special studies. is a system which tells the salesman and his supporting colleagues Who? When? Where? Why? at a single glance. It is an essen-

efficiency and discipline. A single form is all that is equired to create a conrolled situation for both sales calls and salesman/ essential elements are bylous; Time/Day; Company; Name of Contact; retephone No; Purpose of Cell: Appointment or Cold Call? Overnight address and

all that is needed.

As for the making of appointmenta, it is important that a journey planning system is accompanied by efficient; geogrephically or lented client records in order to facilitate, both camera with a five-inch lens for efficient routeing and that possibility of unschedujed apeculative calls on existing and prospective clients in the same locality. (This would normally exclude first-time calls.)

Here of the making of for 35p.

GETTING hard copy output difficult, particularly in colour, but Graphic Display Systems of Cameridge salls a Polaroto efficient routeing and that a five-inch with a five-inch with a five-inch prints for 35 penca each.

Although there are cheaper following director John Davidson says that a five-inch glass land is necessary to ensuite freedom from distortion.

2/3 weeks in advance of intended calling as opposed to the usual one week. Mos

It is undeniable that where there is mystery con-cerning the activity of salesmen there is also incfficiency. People seldon hide those facets of their nature which might increase their esteem among their fellows. So, when it salesman cannot be found it could mean that he is disorganised, dis honest, lazy, inefficient certainly not management material and possibly looking for a new job However, the most likely falling is the lack of ar

effective journey planning system.
A journey planning sys. locking system A DIGITAL combination sys-tem, specially designed for computer suites, banks and other high security areas, hos been introduced by the Baron

Security Group
The Digital Combination System eliminates the use of enables authorised personnel to change the operating code of will. On pressing the correct code, the door unlocks nmedictely. The control unit is boused in

a lockable steel box, and en alarm facility warns of in-

plus VAT.
The Baron Security Group (CW), 52 Monmouth Street,
London WC2H 9EP. Tel: 01-836 6128.

A copy of the completed Colour prints form to interested parties is all that is needed. As for the making of for 350

Puzzle Answei

570.140 x 6 = 3.420,840.

We're successful because our staff are

Data Logic operates at the forefront of computing, applying the very latest hardware and techniques to practical commercial problems. We cover the range from mainframes to the smallest computers. We are leaders in the use of microprocessors for applications that not so long ago required far larger machines. Several of our projects involve dispersed networks of ten or more minicomputers.

The exceptional scope of work is important to our staff. We can match their individual experience to their projects. Equally, we can ensure that each project adds to their experience. As

computing itself develops, so do they.

Over the past year Data Logic has grown dramatically insize in scope of work and in reputation. Our expansion has meant unrivalled opportunities for career progression. We are not prepared to promote people before they are ready for it. But when they are ready — and we give all the assistance we can — the positions as senior programmer, senior analyst, project manager and consultant will be there waiting for them.

The reason is simple. We know that we are successful only if our staff are.

Senior. Software Staff.

(Ref PS|01).

For mainframe, minicomputer and mixed processor systems, usually supporting terminal networks. Increasingly Data Logic's turnkey projects involve minicomputers at multiple sites.

Applicants must have at least five years experience including some work in consultancy, system design or team management. Substantial knowledge is required of either high level language implementation on a leading mainframe or assembler language development on DEC, Data General or other leading minicomputers. We are especially interested in experience of:

- database systems
- distributed systems
- data communications telemetry
- operating systems design and implementation.

Salaries will be up to £8,500, with a car allowance or company car for those at the top end of the scale.

There are vacancies at our Greenford, Birmingham and Menchester offices.

Programmers

(Ref PS/02)

For both mainframe and minicomputer projects which include commercial applications, monitoring and control, and scientific analysis.

Applicants should have at least three years programming and/or analysis experience in high-level language or assembler on any leading mainframe or mini. Salaries will be in the range of £4,500 to

Vacancies exist in our Greenford, Birmingham and Manchester offices.

Data` **Communications** Support **Engineers**

For sales and engineering support roles within Communications Products Division which markets the INTERTEL range of modems and Network Control Systems.

Applicants should have experience either in sales support for data equipment or in design for digital and analogue systems. A degree or HNC qualification is desirable.

Base location will be in Central London but high mobility will be essential and a car will be provided. Salaries will be in the region of £6,500.

Systems Support Staff

(Ref CE/4)

For specialist support roles within our Customer Engineering Division, which provides nationwide field service for terminal and distributed systems, word processors and data communications equipment. The support staff deal with hardware and software, within a diversity of user environments. Each product represents the

state-of-the-art in its area. Applicants should have a degree in electronic engineering or computing science, followed by at least three years work in specialist support with a

mainframe manufacturer. Base location will be Harlow, Essex but high mobility is essential and a car will be provided.

Telephone 01-486 7288.

A Raytheon Company

Kathy Martin, Data Logic Limited, 29 Marylebone Road, London NWI.

Programmers

(Ref TS/03)

To work on systems software, entulators and advanced packages for applications such as data entry, for Data Logic's PTS100 range of terminal and distributed systems. This is an outstanding opportunity to gain experience in the development of complex high performance standard software. Programmers will work in small trans, taking considerable responsibility for distinct functional areas of the total

Applicants should have one to three years experience of software implementation in high-level or assembler languages. A degree in computing sclence is desirable.

Location will be Harlow, Essex and salaries will be in the range of £4,500 to £6,500.

Enfield

£3,700-£5,700

You probably have a succassful background in permanant racruitment, your present income is

around the £6000-£8000 bracket and you are hungry for more money BUT most of all you are

MORE FREEDOM TO WORK

MORE SCOPE ★ AND MORE MONEY

then we may have just what you are looking for!

Now that wa have established e successful Parmanent Division, we require someone who can take

ovar this Division and expand it and, ultimately, taking full managerial responsibility (and the perks

IF YOU'VE GOT WHAT IT TAKES

TEL 01-439 3671

Systems Analyst

The Computer Section is responsible for developing and

meintaining a wide variety of systems on the Council's ICL 1902T Installation with communications equipment. This

A staning salary between £5,517 and £5,853 on a scale rising to £5,345 (inclusiva).

Annual leave entitlement 22 days plus one extra day's leave

Please contact John Alisop, Borough Transurar's Dapertment, 22-26 Clements Road, liferd IG1 1BD, telephona 01-47B 3020, extension 309, for an application form.

Pension scheme and subsidised stall rastaurant

ASSISTANT TO THE

MANAGER

Telephone us now in strictest confidence

frustrated by the limitations of your current position — in other words you need —

*ICL 1900's

*ICL 2900's

that go with it).

* IBM 360

* Communications

For operators with ICL experience, this is a chance to widen your skills in a whole range of hardware and software. We have the equipment, the training commitment and the opportunities to increase your experience significantly.

computer services

ICL Computer

Operators

AS WARDOUR STREET LONGON WIN STB

CONSULTANT

Our existing installation in Enfield comprises an ICL 2972/VMEB system due for enhancement to a dual 2972, three large ICL 1900 mainframes and an IBM 360 system. The installation lies at the centre of an extension are stallation. an extensive communications network covering East Anglia.

As we expand our operations to cover the transfer from 1900 to 2900 work we will require more operators; preference will be given to trained operators with a minimum of two years experience on ICL 1900

The salary will depend on your experience and will be within the range of £3300-£5000 p.a. plus 17% shift allowance on basic pay. Benefits include subsidised resiaurant, 4 weeks holiday p.a., pension and sickness schemes, sports and social facilities etc. "

These positions are open to both male and female applicants. Application forms can be obtained from:

The Personnel Officer, Eastern Gas, Tower Point, Sydney Road, Enfield, Middlesex.

Tel: 01-366 1234 ext. 227 or 402.

EASTERNGAS

OPERATORS!

For the best permenent jobe

DOS/VS ELDN ... 2 x OPS SYST 3 SNR OP N.LON. C5500 SNROP DAYS 08/VS. CB000 W.LON.

> COMPUVAC 253 5042



and experience.

Applicants special write styling desiries of the applicants specially applicated to the application of the app

UNIVERSITY OF CLASCOW

PROGRAMMER

FOR S.R.C.

MINI-COMPUTER

The S. R. C. will shortly areas to the facility of the facility of Engineering. The Copies will be for the facility of Engineering. The Copies will be for the facility of Engineering. The Copies with form part of a national stands, providing rherenties compatible to the facility of the

The Data Communications
Division of Harris Systems has opened a new South of England branch office at Banda House, Cambridge Grove, Hamnat-smith, London Wa. Tet. 01-741-0952

288 x 2 = 576.

SARAH COVENTRY LIMITED ANALYST/ **PROGRAMMER**

The Compeny has been established in the United Kingdom for some filteen veere and is a subaidiary of one of the leeding iswellery direct selling companies in

An opportunity has arisen for an analyst / programmer to take the responsibility of the present computer

The primary job will be to examine and make proposals for an upgraded system from the present ICL 1901 A. This will involve preparing project drafts end agreeing specifications with the relevant uasr depertments before plenning, writing, testing and documenting

This importent tesk will be in addition to maintaining current systems and supervising the present computer

The person will require tect, drivs end enthusiasm, will have a minimum of 2 years experience of COBOL and have been educated to 'H' or 'A' grade.

An attractive solery is offered and the Company has a contributory pension scheme. Housing is readily evailsble in the erea which is a pleesant end agreeable pert of

Apply, giving full details of exporisnce to: Personnal Manager Serah Coventry Limited Eastfield Industrial Estate
GLENROTHES, Fife KY7 4NR

Computer **Programmer**

Total salary in the range £3,912-£4,812

The Council operates on t.B.M. System 3 Model 12 with 3340 Disk Drives and a 3411 Topo Drive which provides o tiensive and increasing lange of User services Applications ere invited to: this new post from programmers with two years' RPGII experience to join our team at the Council's Knowle Green Offices, Steines, Middx.

Application forms and further details are evallable from the Personnel Office Council Offices, Knowle Green, Staines Tel: Stainos 51488, Ext. 250

FORTRAN

ENGINEERING SCIENTIFIC BACKGROUND

CONTACT US, THE SPECIALISTS IN THESE FIELDS

We urgently require Programmers with experience of Fortren, Assembler, Coret or Basic for Real-tims Applications.

Jobs from £3,500 to £8,000 in all erees. Phone now for e fired list of vacancies.

Cepitel Appaintmente, 25 Windmill Street, London, W1 Telephone: 01-537 S551 (day) — 01-525 S652 (avas.)

TEESAIDE POLYTECHNIC DEPARTMENT OF MECHANICAL

RESEARCH **ASSISTANTSHIP SMALL BATCH PROCESSING**

Applications are invited for an LEA Research Assistantial pro work on the Automation of Smell Batch Processing. The aim of the project to apply microprocessor technology to bring computer-aided manufacturing techniques within the range of small firms. The poet is computer as a salary of £2,553-£2.774 and inspires up as hours' issessing salary of £2,653-£2,774 and in-volyes up to aix hours' teaching per week, without additional pay-mont. Registration for a CNAA higher degree is expected. Can-gidates should have or expect to get a degree in a discipling in-volving computer science; com-puter technology, or control en-gidaering with some computer content.

Application forms and turther Application forms and turning particular are available from the Staffing Section, Towards Polyte-Chinie, Bornuch Road, Middleshbrough, Clayeland, TS 1384, and are columnable within 14 days of the appearance of this advertise.

Applicants should have a good working knowledge of OOS or OOS /VS coupled with the ability to communicate alterively, and to selve operational pro-

Application forms from Personnal Gillest, Room A202, Town Hell Athete, Eding WS 28Y, Tel. 21 889 2424 ent. 3380, Closing date 4/8/78. Please quots ref. no. 277



SHIFT LEADER

6t. Philip's R.C. Sixth Form College Hagley Road, Edgbaston B16 ZUF Graduate to teach

> CHEMISTRY to Advanced Level end cole to swist in teaching of BIOLOGY, Scale 1. Post would suit student completing his/har professional studies this June.

CITY OF BIRMINGHAM EDUCATION DEPT.

Applications (by letter in first instance) including curriculum vites and the names and addresses of two referees, should be sent to the Principal as soon as possible. There is a scheme for assistence with response expenses.

South East Thamse Regional Health Authority

Senior Software Programmer Salary Beale 14; 2549 (Including London Weighting)

Jon Form and more information from Administration tent South East Themes # II.A., Regional Computer Brops Drive London SE II. 41H; D1-735:00711 (6x)

MAGAZINE TECHNICAL **EDITOR**

Operations Vacancies

Phillips Petroleum Compeny has continued to be in the Iorelrant of North Soa Oil and Gas development. Our computer installation, situated close to Victorio Station, is based on an IBM 3031 processor under OS/VS1 with plans to install a second IBM 3031 and migrate to MVS/JES 3

during 1900. A lergs teleprocessing network is an integral port of the system serving both local and

To eupervise the dey-to-day running of the central computer installetion providing a reliable end totally available system (24 hours/365 days/yeer). The successful candidate will be responsible also for recruitment and training of operating personnel, the writing and maintenance of standards, the

production of monthly reports end lieison with users and menufacturors. Current stalf levof reporting

We require an experienced supervisor to run our computer facilities on a shift basis. The successful candidate should have at lesst five years' experience on IBM 370/303X under OS and good

understanding of IBM software / herdwere. Telecommunications experience would be an advantage A 12-hour shift system is in operation with at least one week in five working normal office hours. Shift

TELECOMMUNICATIONS NETWORK CONTROLLER

A newly crested position reflecting the increasing importance of the teleprocessing aspects of the company's business. The Network Controller will be totally responsible for the day to day running of the teleprocessing systems from an operational viewpoint, including lieison with usors, the systems

software end telecommunications groups, and the collection and analysis of statistical information. You will elso be involved with identifying end analysing VDU and line problems, making may

necessery errangements for alternative fecilities and organising back-up and recovery procedures to

We are looking for someone with at feest four years' operations experience, some of which will live

We are interested in people experienced in the control and meintenance of program and procedure libreries, the spility to write production JCL for business applications, and on approximation of data

security methods. You will be involved in the analysis of our current production systems and recommending and implementing changes to improve rollability and operating efficiency, the writing

of JCL for new epplications, end the testing of now or amendod systems prior to handaver to the A thorough knowledge IBM JCL and utilities end a knowledge of business systems and unalysis echniques is required for this position. Telecommunications experience would be an advantage.

If you are interested in a challenging career in a fest moving industry — with salary and honofits to match the experience, skill and offert which these jobs dumand — than please write or telephone for

B. Sutherland, Placement and Training Unit, Phillips Petroleum Company Europe-Africe, Portland House, Stag Piece, London SW1E 50A. Tel. No. Q1-B28 976B. 24-hour anewering/recording service on 01-B2B 2993.

Phillips Petroleum Company

The Performance Company

been spent controlling e telecommunications natwork. A comprehensive knowledge of

OPERATIONS SUPPORT ANALYST (Ref. DPO/479/004)

You should heve a minimum of live yeers' DP experisnce of which three yeers will have been nt

eupervisory level in an operations environment, a thorough understanding of IBM herdware / software, experience of teleprocessing networks and a proven record of project

remote users eround this globe. The developments within this sphere of activities have necessitated the ecquisition of highly motiveted DP professionels to IIII the following vaconcies.

VICTORIA, LONDON

CHIEF OPERATOR (Ref. DP0/479/001)

coordination and management reporting.

allowance end time off is generous.

ensure speedy systems restoration

|Ref. DPO/479/003)

SHIFT LEADER (Ref. DPO/479/002)

eleconimunications theory end fecilities is eseentist.

Technical Editor needed for new monthly (London-based) computer magetine — pray fou a publishing seperiarios a help, though not essential. Applicants should have a thorough and wide ranging knowledge of present day pomputer. Isohnology, and its applications, Sefary is negotiable.

Aleo, freelance writers required Vites to Brain Services
14 Resident Place
Looded W/2 102
44 Missions 01-827/991

PROGRAMMERS HEMEL HEMPSTEAD

PHILLIPS PETROLEUN

We urganity need professional, embiliate, competent Prograftions I more estandard business packages and special application program shifty to work to right schodure and sound commercial application estendard.

Or cell/write to them at: MICROSENSE COMPLITERS HELPS

SURREY SUSSEX

Our client, a major United Kingdom name with head office in West Yorkshire wishes to recruit a Data Processing Manager.

This is a key position, reporting directly to the Finance Director, carrying responsibility for a department of 90 people and hardware currently installed worth in the order of £1 million. Current and planned developments involve new systems throughout all the main operational areas of the company and will employ on-line processing and database techniques.

Successful candidates, preferably graduates or professionally qualified, aged mid to late 30's must have extensive data processing experience in a commercial environment. A record of success in implementing major new systems and managerial achievement in data processing are essential requirements for this demanding and challenging position.

An attractive remuneration package will be negotiated including salary from £10,000 plus car, free BUPA, relocation expenses where appropriate and other fringe benefits normally associated with a senior management appointment in a major company.

Applicants should contact Ivor Norton with full career details quoting reference CW/79019 in order to arrange an initial confidential discussion.

The Local Coppell Local Bone Banagae Harrier (1920) appears 2002 for the contraction.

Sales Professional

our liverage, le college mar our ser market derivere restricter de servez and le la live de la live de la form

* Location Manchester

What the statement of t

* Established Territory

Realistic Earnings

This is a unique opportunity to join a market leader in distributive processing systems who are currently enjoying considerable success with advanced products in the local government sector. This particular vacancy is the result of promotion reflecting, considerable well qualified sales potential.

You can expect a high proportion of enhancement business enabling you to meet the realistic quotas; combined with excellent software support that will ensure further market penetration, You will need a proven track record in the systems bureau or terminal

sales area with the enthusiasm and maturity to handle this senior post. Previous experience of local government would be an added advantage, (but is not essential).

THE REWARDS

Base salary to 17,000 on quota earnings £14,500 to £16,500 and a fexible attitude towards first year guarantees. Other benefits will include company car or car allowance, excellent training and an organisational structure offering real career prospects.

For further details contact: DAVID WADE ON 061-838 0427 OR 0785 56013 (outside office hours).



Specialist Computer Recruitment Ltd

Landon (1:935 0871 3 Mandeville Place, Wigmore Street, London WIM 51.3 Landon VI-935 90/1 3 Mangavine Flace, Viginius Surea, London: VVIVI 5135
Birmhyham (021-236 978) 35-37 Great Charles Surea, Cureensway, Birmingham 93-31V
Menehatter 081-833 0427 Blackfrais House, The Parsonage, Manchester M3 2JA A